THE CHEMIST AND DRUGGIST

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Our Country and Colonial Subscribers are requested to furnish the Editor with any trade gossip that they may consider interesting.

Subscribers are requested to observe that, for the future, the receipt of The Chemist and Druggist in a *Green Wrapper* indicates that with that number the term of subscription has expired, and that no further numbers will be sent until the same has been renewed. We issue the notice very respectfully, not that we distrust our Subscribers, but simply because we find it impossible to keep an immense subscription list like that we now have, extending to almost every town in the world, in order without an exact system like this.

Editorial Notes.

THE communications of the Council of the Pharmaceutical Society to the Commissioners of Inland Revenue illustrate the good results of the open discussion that is elicited by the publication of objectionable resolutions. "Where no counsel is, the people fall; but in the multitude of counsellors there is safety." At the December meeting of the Council, the following motion was carried:—

> "That the Board of Inland Revenue be informed that this Council is strongly in favour of the abolition of the patent medicine stamp and license, and would regard such a step as conducive to the best interests of the public, and the proper carrying-out of the provisions of the Pharmacy Act."

At their meeting in February, the Council resolved—

> "That the Commissioners of Inland Revenue be informed that, on further consideration of the question, the Council find among the body they represent such difference of opinion that they are unable to make any strong recommendation on the subject; while at the same time they have no doubt of the very great importance of existing laws, if not repealed, being more distinctly defined, and of their being prevented from being made a means of evading the Pharmacy Act in the sale of poisons."

This second resolution will act as an antidote to the first, and our readers have no reason to fear any action by the Chancellor of the Exchequer or the Board of Inland Revenue as a consequence of the proceedings of the Council. The writers of the letters on this subject—printed in our correspondence—will be delighted to find that the supposed giants which they have attacked turn out to be only windmills. The arguments for and against the abolition of the patent medicine stamp and licence appear to be pretty evenly balanced, if we neglect the preponderating interests of pharmacists. Among the members of the Council who carried the first resolution were men who have shown their devotion to the interests of the general body in numerous ways, and they must not be unduly blamed for an error of judgment which may be traced to their consistent endeavours to elevate Pharmacy. We believe that the first resolution was passed on the supposition that the Patent Medicine Stamp directly encouraged quackery, often of the vilest kind, on the assurance that the uncertainty of the interpretation of the stamp regulations rendered it difficult for the honest pharmacist to carry on his business without breaking the law; and on the further consideration that the sale of patent medicines defeated the object of the principal provisions of the Pharmacy Act. After careful consideration, some of the supporters of the first resolution have come to the conclusion that quackery is limited by the present system instead of being promoted by it. At the present time no patent medicine can be sold without the three-halfpenny stamp, and happily there are no patent medicines sold at a lower price than 7½d. If the stamp were abolished all sorts of nostrums would be scattered abroad by wholesale dealers, and by pharmacists also, at prices ranging from one penny to sixpence, and the Cheap Jack of country fairs would probably reject penknives and crockery to give his undivided attention to the sale of proprietary medicinal articles. We cannot help thinking that the license might be advantageously increased in the country from five shillings to ten shillings, and perhaps up to twenty shillings in towns containing 20,000 inhabitants. We believe that the country druggist's receipts would be increased by such an augmentation of the license, and that the public would be benefited by the change. Any arrangement that would tend to check the sale of the druggist's proprietary articles by drapers, stationers, and grocers, would be gladly accepted by the trade.

Following in the footsteps of Mr. Wade our correspondent "Chemist" protests against the special recommendation of physicians respecting the choice of dispensers. It is high time that this professional touting for great dispensing houses should be discouraged. There must necessarily be great and small men in pharmacy just as there are great and small men in medicine, but the Pharmacy Act has insured the proper qualifications of every dispenser. While Mr. Pestle, who has inherited a west-end concern, is overwhelmed with prescriptions, poor Mr. Mortar, who has passed the major, is selling feeding-bottles and hair-oil in his suburban pharmacy. Physicians are not justified in assuming that any legally qualified pharmacist is too ignorant or too dishonest to compound the medicines they prescribe.

At a recent meeting of the College of Pharmacy of the City of New York, Mr. Henry Deane, F.L.S., Mr. Daniel Hanbury, F.R.S., and Professor Attfield, F.C.S., were elected honorary members.

The French Court of Cassation in March, 1869, decided, reversing a decision of the Imperial Court of Paris, that by virtue of the law of the 23rd of June, 1857, and subsequent diplomatic conventions made between France and England, English subjects may sue Frenchmen for counterfeiting their English trade marks. In another case (Christy v. Daude") recently before the Civil Tribunal of Paris, the right of English subjects to have their trade marks protected by the French Courts has been again recognised.

The chemistry of opium has become a wide field of study, and explorers are continually annexing new ground. An idea of the extent of this subject may be obtained from the following list of products exhibited at the Royal Society's *soirée*, by Messrs. J. F. Macfarlane and Co. of Edinburgh:—1. Acetate of Morphia; 2. Morphia Crystals; 3. Poppy-head showing incision from which the juice exudes; 4. Best Turkey Opium; 5. Inferior Turkey Opium; 6. Persian Opium; 7. Adulterations of opium (leaden bullets and iron balls); 8. Morphia Hydrochlorate; 9. Morphia Sulphate; 10. Codeia; 11. Codeia Acetate; 12. Papaverine; 13. Meconic Acid; 14. Narceine; 15. Thebaine; 16. Hemipinic Acid, formed when opianic acid is treated with bichromate of potassium and sulphuric acid in a dilute solution, also by the action of caustic potash on opianic acid; 17. Opianic Acid, produced when narcotine is acted upon by oxidizing agents, cotarnine being produced at the same time; 18. Narcotine; 19. Dimethyl-Nornarcotine, formed by the short action of hydrochloric acid on narcotine; 20. Methyl Nor-narcotine obtained by the prolonged action of hydrochloric acid on narcotine; 21. Chloride of Nornarcotine (nornarcotine obtained by the action of hydriodic acid on narcotine); 22. Chloride of Dimethyl Nornarcotine; 23. Meconine from Narcotine, obtained by heating narcotine for a long time with water (or *per se* at 200°), when it splits up into meconine and cotarnine; 24. Meconine obtained from opianic acid under the influence of nascent hydrogen; 25. Meconine extracted from opium; [These three specimens of meconine have precisely the same chemical and physical properties, hence it may be assumed that meconine is not a normal constituent of opium, but that its presence in opium residues is due to the decomposition of narcotine.] 26. Cotarnine; 27. Hydrochlorate of Cotarninide by hydrochloric acid on cotarnine; 28. Hypogallic Acid formed when hemipinic acid is treated with hydriodic acid; 29. Methyl-Hypogallic Acid produced by the action of hydrochloric acid on hemipinic acid; 30. Dinitro-Methyl-Hypogallic Acid; 31. Apophyllic Acid obtained by the action of strong nitric acid on cotarnine; 32. Methyl-Nor-Opianic Acid produced when opianic acid is heated with excess of hydrochloric acid; 33. Opiammon produced by the action of nitric acid on narcotine; 34. Komenic Acid; 35. Opianate of Ethyl; 36. Chloro-meconine. A smaller case contributed by the same firm contained:—1. Codeia Crystals; 2. Chlorocodide; 3. Apomorphia Hydrochlorate from codeia; 4. Codeia reformed from chlorocodide; 6. Morphia Crystals; 7. Apomorphia Hydrochlorate from morphia. The amount of apomorphia hydrochlorate exhibited (350 grains) forms 3,500 doses. Besides these, three new bases recently obtained from morphia and codeia, by Messrs. Matthiessen, Mayer and Burnside, were shown.

THE LAW OF ACCOMMODATION.

It is within the memory of us all that the pharmacist said more than once a Sunday, Incline our hearts to break this law. Other trades had their public recognitions and their social gatherings. Men and women were not afraid to be married and given in marriage. They were not ignorant of, nor did they stand aloof from, the humanities of the age; yet they were not bankrupt: on the contrary, from them came the gift of those endowed schools, with regard to which England stands alone. To what a wonderful extent men engaged in the same line of life helped each other, can be compared only with the aid which the truly poor mutually afford. That is sublime. Let us quote one instance:—Late in the week a printing-office was in flames. The Fire King claimed his own. The premises were gutted, and the whole issue of a journal, which was the *Times* of medicine, perished. Others came to the rescue, and on Monday morning the publication was in the hands of the subscribers. They had waited two days, one being Sunday. Meanwhile (let us not be thought sarcastic) the pharmacist, living in a small island of his own, was shut out from world sympathies. None could say his hand was against every one, for he had no one's hand to shake, nor had he sufficient knowledge of his neighbour whereon to found data for a quarrel. Time works wonders. Whether it be that we live in an age of progress which will not stand still; whether our higher educational advantages have created broader and truer modes of action, and taught us better the meaning of the New Commandment—certain it is, that the old, bad, selfish system has to a large extent expired. To the honour of London be it said, that though nowhere is there keener competition—nowhere is there more liberal accommodation. May we hazard the sentence, that in some provincial towns, specially those of painful respectability, this is not the case? May we not—why should we not—hope for better things? Let those who feel themselves deficient in this particular imitate the example set.

ON THE USE OF ETHER AS AN INTOXICANT IN THE NORTH OF IRELAND.

BY HARRY NAPIER DRAPER, F.C.S.*

The number of cases recorded by writers on therapeutics and toxicology in which ether in its fluid form has been continuously used as a nervous stimulant is very small. Instances are quoted by Pereira (*Mat. Med.*, vol. ii., p. 1965), where it was habitually taken in large doses, but in these it was employed for the relief of physical suffering. One is that of the chemist, Briquet, who took a pint of ether daily, to alleviate the intense agony caused by the intestinal inflammation of which he was dying. Another is that of a gentleman who was in the habit of taking about two ounces daily for the relief of asthma.

An example of the use of ether as an intoxicant is given by Taylor (*On Poisons*, 1st ed., p. 435). In this case a young man was in the habit of taking large doses of the fluid, which he obtained at different druggists' shops. Its effect was so like alcoholic intoxication that he was brought before a magistrate on a charge of drunkenness. What real ground for the belief there may be, I know not, but there is a widely diffused popular impression that ether is used as a stimulant by women of the higher ranks of society. The existence of the practice was, for example, alluded to in the *Daily Telegraph* only a few weeks since.

But neither these isolated cases of the habitual use of ether—cases, too, in which the habit has, without doubt, had its origin in the medicinal use of the stimulant—nor the floating idea that there are fair consumers of *Hoffmann's anodyne* and *perles d'ether*, for whom ether has never been prescribed, quite prepare one for the discovery that there is in the northern part of Ireland a number of people who, forswearing alcohol, supply its place with ether; a race to whom ether is what koumiss is to a Kalmuck, ava to a South Sea Islander, absinthe to a certain class of Frenchmen, or gin and whiskey to their more immediate neighbours. It is not the medicinal consumption of opium which rules its price, nor the surgical employment of chloroform which makes its production a special manufacture, and not Dr. Collis Brown himself could have anticipated the tide of popular favour which would have set in for his palatable combination of both these anodynes. These are things not difficult to understand, for human nature is impatient of pain, and grasps at any nepenthe which presents itself in pleasing guise; but that any condition of things should arise which should take a nauseous fluid like ether from the pharmacopœia and the laboratory of the chemist, and make it the recognised stimulant of any set of men, and that with them it should supplant alcohol—that they should take 'nips' of ether morning, noon, and night, as they would whiskey, and—for anything shown to the contrary—drink good luck or ratify bargains in a glass of ether, was not a thing to look for, and is, perhaps, without parallel in the history of narcotic stimulants. The facts, nevertheless, are simply as I am about to state them. They rest upon the authority of a number of gentlemen who, in their respective capacities of physicians, clergymen, ether manufacturers, and druggists, have been applied to to furnish information on the subject, and I here wish to thank these gentlemen for their kindness in replying to the systematic series of questions addressed to them. My especial thanks are due to my friend, Dr. William Frazer, who has spared no pains in the endeavour to obtain accurate information, and to the success of whose inquiries I am much indebted.

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* From the Dublin *Medical Press and Circular*, communicated by the Author.

I should say, also, that my data having being collected from different parts of the North of Ireland, the result is to be taken as the mean of the information obtained, and not as applying to any one locality.

The practice of ether drinking appears to be almost altogether confined to the counties of Londonderry, Antrim, and Tyrone; and the towns in which it most prevails are Draperstown, Maghera (Derry); Cookstown and Omagh (Tyrone). Belfast is the depot to which the ether manufacturers of Dublin, Edinburgh, and Glasgow send the supplies which thence find their way into the smaller towns.

So far as I can learn, the introduction of the practice dates from about five years since, and it is curious in its very origin. While it is only right to say that one of my correspondents attributes it to habit acquired by the medicinal use of the drug in cases where alcoholic stimulants were contra-indicated, and another to the desire of "getting drunk more cheaply," I have not found either of these theories to bear examination, and my authorities are, with these two exceptions, unanimous in the opinion that ether drinking is a consequence of the laudable efforts made by the Roman Catholic clergy in inducing their flocks to abstain from whiskey. The consumers of ether are said to be nearly all Catholics, and to belong chiefly to the class of small farmers, though the habit certainly prevails among mill hands and other operatives.

The usual quantity of ether taken at one time is from two to four drachms, and this dose is repeated twice, thrice, or even four and and six times daily. It is taken unmixed with water; indeed, its very slight solubility in that fluid[*] would make this a useless precaution; but the usual practice is, to take first a mouthful of water, then the dose of ether, and again a mouthful of water.

The intoxication produced by ether resembles that of alcohol, but is much more rapidly produced, and is more evanescent. The ether seems to be eliminated entirely by the lungs, as the urine has no odour of it; and, on the other hand, the breath of the ether drinker always affords ample evidence of his addiction to the habit. I am credibly informed that at the fair of Draperstown—which appears to be the paradise of ether drinkers—the provalent smell is not, as at country fairs, of pigs, tobacco-smoke, or of unwashed human beings, but of *ether*.

I have not been able to learn that, apart from the moral ill effects common to all excitants and intoxicants, the habitual use of ether brings in its train any peculiar evils, and although it would be wrong to draw a conclusion from completely negative evidence, I am disposed to believe that the votaries of ether incur less danger from the habit than ordinary dram drinkers; and there are two good reasons for this belief. If we assume that there is nothing specifically injurious in the action of ether, it will readily be admitted that, having a definite chemical composition, and not being very liable to adulteration with other fluids, it must be an improvement upon the sophisticated alcoholic potations, which, with these people, it has replaced. Again, the affinity of ether for water is so slight[*] that dehydration of the mucous tissue of the alimentary canal, and that apeptic action which so well mark the difference between the effect of ardent spirits and of alcohol in the form of unbrandied wine, cannot be evils attending its ingestion.

All the ether consumed in this way is that which is technically termed "methylated," that is, prepared from methylated spirit. It may be with some reason supposed that the action of ether thus obtained upon the human economy cannot be predicated from the known action of ether made from pure alcohol. But although the gaseous oxide of methyl is soluble in ethylic oxide, this body can be present but in small quantity in the ether of commerce,[*] and, though its exact therapeutic action is unknown, can affect the action of the ether but slightly. Indeed, by far the greater proportion of the ether which has been used medicinally for many years past has been "methylated," and is so at present; and though to any one whose senses of smell and taste are fairly practised, the difference in taste and odour of pure and methylated ether are apparent, the quantity of hydrocarbon compounds producing this difference must be exceedingly minute, for they afford no sensible residue on the evaporation of even a considerable quantity of the ether. And, indeed, as the hydrocarbons have a boiling point considerably above that of water, and as the ether of commerce distils at about 105° Fahr., they would evidently *à priori* contaminate it but slightly. These hydrocarbons might be, perhaps, considered to bear somewhat the same relation to the effect of the ether, as the fusel-oil and fat-acid ethers of whiskey and brandy do to the effect of their alcohol.

If methylated spirit had never been introduced and ether had not been made from it, ether could scarcely have become a popular stimulant in the North of Ireland. And it may not be without interest to look at this fact for a moment, from an Inland Revenue point of view. Methylated spirit is absolutely exempt from duty, and especial legislation provides against the profitable exercise of chemical ingenuity in rendering it potable. But the authorities concerned never could have foreseen that the cheap ether which is so great a boon to practical chemists would ever find a place in the shops of grocers and publicans. The wholesale price of a pound of ether made from pure spirit is five shillings, but a pound of methylated ether is sold in Tyrone and Derry for one shilling and sixpence. As there are about seven and a half pounds in a gallon of commercial ether, a gallon costs eleven shillings and threepence. Now, if we assume the ordinary quantity taken at one time to average three drachms, and this quantity to be (in stimulant effect) the equivalent of half-a-glass of whiskey, we arrive at the result that three gallons of ether supply the place of ten gallons of whiskey, which, at 15° under proof, pay duty to the amount of £4 5s., while the other pays nothing. It is very difficult to arrive at any accurate idea of the extent to which ether is consumed in the North of Ireland. Omagh is said to take about 400 Winchester quarts (equal to 250 gallons) yearly, and one Dublin manufacturer has sent to Belfast at the rate of 4,000 gallons yearly. Now, if for the sake of illustration, this latter quantity be taken as the total consumption of the North, the excise suffers by the practice to the extent of £5,666 per annum. These figures must, however, fall immeasurably short of representing the total consumption. The excise authorities have, I understand, attempted to interfere, but of course, without success, as there is no present legal restriction affecting the sale of ether, whether pure or methylated.

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[*] A pint of water dissolves but two ounces of ether.

[*] 1,000 volumes of ether dissolve but 10 volumes of water.

[†] Methylated spirit contains but 10 per cent. of wood spirit, which in its turn consists in part only of methylic alcohol.

This subject, too, cannot fail to be of interest to Insurance Companies, whose risks must be enormously increased by so dangerously inflammable a liquid being stored under the most unfavourable conditions, and handled by people so ignorant of its properties, as country spirit dealers must necessarily be.

Though I have put together all the facts which a careful consideration of the subject seemed to make the chief objects of inquiry, I have the disadvantage of not possessing personal experience—of not having visited an ether-drinking district. This deficiency I hope, ere long, to make good, but in the meantime, I trust that those of my readers who reside in such districts, will be induced to make public any facts or statistics which come within their knowledge.

I am indisposed at present to make any generalizations, but even at this early stage of the inquiry, it is impossible not to be struck with its forcible illustration of the fact that if men are deprived, or deprive themselves, of any one form of nervous stimulant, they will sooner or later replace it by another. And, in the words of Liebig, I would ask those who may be hastily disposed to look upon this practice of ether drinking as utterly vicious and harmful, first to inquire "whether it depend upon sensual and sinful inclinations merely, that every people of the globe has appropriated some such means of acting on the nervous life; from the shores of the Pacific, where the Indian retires from life for days, in order to enjoy the bliss of intoxication with coca; to the Arctic regions, where Kamtschaidales and Koriakes prepare an intoxicating beverage from a poisonous mushroom."

ON THE TESTING OF PETROLEUM SPIRIT.

BY F. C. CALVERT, F.R.S., F.C.S., ETC.*

HAVING read with much interest of late several papers on the Petroleum Act of 1868 and on the uncertainty of getting good results when testing the "flashing point" of petroleum spirit (especially the papers published by Dr. Paul in the *Chemical News*, and a pamphlet by Mr. Norman Tate, Liverpool), I deemed it my duty to make a series of experiments with the hope of throwing some light on the subject, the more so, that the defect of the Act of 1868 is that no length of time is specified for the raising of the petroleum spirit from natural temperatures to its flashing point. Thus the Act states :—"The outer vessel shall be filled with cold, or nearly cold water. A small flame shall be applied at the bottom of the outer vessel, and the thermometer shall be inserted into the oil so that the bulb shall be immersed about one and a half inches beneath the surface." What is understood by a "small flame" appears to me a difficult question whether it shall be such as to require 15, 20, or 30 minutes to raise the petroleum spirit from natural temperatures to its flashing point, say 98° or 105° Fahr., the Act does not state.

The following experiments, made with six samples of petroleum spirit, placed in my hands by the magistrates of Manchester, will show how important the above question is with reference to the testing of petroleum spirit, and the absolute necessity for the safety of the public as well as for the interests of those who deal in the article that the Act should define the exact space of time that should be employed in the testing of any sample of petroleum spirit :—

Sample of Petroleum at 52° Fahr.	Time, 15 Minutes.	Time, 20 Minutes.	Time, 30 Minutes.
No. 1	96° Fahr.	98° Fahr.	102° Fahr.
,, 2	92° ,,	99° ,,	101° ,,
,, 3	90° ,,	98° ,,	101° ,,
,, 4	94° ,,	96° ,,	104° ,,
,, 5	96° ,,	98° ,,	110° ,,
,, 6	95° ,,	99° ,,	108° ,,

These results clearly show the influence of time in raising six samples of petroleum spirit from 52° Fahr. to their flashing points. Thus, when fifteen or twenty minutes are employed, the whole of the six samples tested could not be called petroleum, according to the Act of 1868; the owner would be liable to a penalty and the loss of the fluids; whilst if the time employed to heat the liquid is half an hour, they would all be considered petroleums, their flashing points being above 100° Fahr.

Therefore, there can be no doubt that, according to the time employed so are the results altered; the longer an operator is in completing his test the higher will be the flashing point of the spirit. This is probably due to the fact that the most volatile products gradually escape in the atmosphere, and are never in sufficient quantity to produce a flash where a taper, as described in the Act, is passed within a quarter of an inch from the surface of the spirit. I am, therefore, of opinion that as the Act has been made to protect the public against fire, and explosions resulting from the employment of too highly inflammable hydrocarbons, the chemist or person called upon to test liquids of this class should raise the temperature of the fluids as quickly as possible (of course employing the apparatus described in the Act), otherwise they favour the vendor and manufacturer to the detriment of the consumer.

The next series of experiments were made with a view to corroborating a statement made by Mr. Norman Tate, viz., if two thermometers are placed into the petroleum spirit, one as indicated in the Act, one and a half inches below the surface of the liquid, the other being only half an inch below the surface, a difference of several degrees will be noticed between them at the time the vapour will flash, and I am happy to say the following results confirm Mr. Tate's interesting observations :—

	Flashed at			Flashed at	
No. 4	94° Fahr.	1½ inches	...	99° Fahr.	½ an inch.
,, 5	94° ,,	,,	...	98° ,,	,,
,, 6	95° ,,	,,	...	99° ,,	,,

This curious and unusual fact of a fluid having a much higher temperature near the surface than it has an inch below what may be considered the centre of the bulk of the fluid, is due, in my opinion, to this, that the petroleum not being a homogeneous liquid, but a mixture of several hydrocarbons, the highest products being first expelled, the heat arises towards the surface, and in this way the difference in temperature referred to is produced.

It was with a view of overcoming this practical difficulty that a series of experiments were instituted, in which the operations were conducted in the usual way, with this exception, that the liquid was kept in a constant state of agitation (except at the time when a flame was passed over to observe the flashing point) by the thermometer, and the results obtained were as follows :—

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* Communicated by the Author.

No. 1	did not flash at	102° Fahr.
„ 2	flashed at ...	99° „
„ 3	„ ...	98° „
„ 5	„ ...	98° „
„ 6	„ ...	104° „

These experiments appear to me to confirm the explanation given above, as to the cause which produced the difference of the two thermometers, placed at unequal depths in the fluids under examination; for it will be observed that the flashing points of the hydrocarbons are raised several degrees. In my opinion, this fact is due to the agitation having facilitated the gradual escape of the most volatile products; the flash will not occur until a sufficient quantity of the more denser vapours have been volatilised and collected on the liquid to be tested.

I believe many of the anomalies above described are principally owing to the difficulty, notwithstanding any amount of care that may be bestowed on the operation, in raising the temperature of the petroleum spirit from natural temperatures in a certain time, say fifteen, twenty, or thirty minutes, to their flashing points; and as the true flashing points of the fluid depend entirely on the time employed in raising its temperature, I would propose the following method, which will enable every operator in any part of the United Kingdom to determine the flashing point of a petroleum with certainty, and feel satisfied that another manipulator will obtain similar results.

The process consists in heating water to ten degrees above the flashingpoint of the spirit (aproximately tested) in the outer vessel, such as described in the Act, removing the flame, and then placing the can in the water, and filling it at once carefully with petroleum spirit. The thermometer should be placed with the bulb half an inch below the surface of the spirit, and the flashing point then ascertained in the usual manner.

The following are the results I obtained with the same six samples of petroleum which I employed in my previous experiments :—

		1st Exp.	2nd Exp.
No. 1	flashed at ...	98° Fahr. ...	99° Fahr.
„ 2	„ ...	95° „ ...	96° „
„ 3	„ ...	96° „ ...	97° „
„ 4	„ ...	96° „ ...	97° „
„ 5	„ ...	96·5° „ ...	97° „

I am also of opinion that a gas flame should be employed in preference to a spirit lamp, when the test is made in the manner described by the Act, as a greater regularity in raising the temperature can be secured. I have employed in my experiments, and I advise every one to do the same, the excellent suggestion made by Mr. Norman Tate, viz., a small gas flame instead of that produced by a match or a taper for testing the flashing point of the spirit.

I consider the apparatus proposed by Mr. Miles would tend to give certainty to the trial, which at the present time cannot be satisfactorily performed. From the above experiments, the following conclusion may be drawn, viz., that the Petroleum Act of 1868 does not give sufficient and precise instruction for testing petroleum spirit; therefore it is to be hoped that Government will take the matter in hand, and do away with the objection of the present Act, substituting more clearly defined rules and instructions, so as to enable the operator to determine the flashing point of petroleum spirit with greater accuracy.

ON A COMMON SOURCE OF ERROR IN CONVERTING IMPERIAL INTO WINE MEASURE.*

BY E. B. SHUTTLEWORTH.

In making any of the official preparations, of which liquids form a part, it either becomes necessary to use Imperial measures, or else to reduce the quantities to the wine or apothecaries' standard. The latter expedient is generally adopted, inasmuch as wine measures are in this country best suited to the purposes of trade, and are possessed by all; while measures of the imperial gallon and its divisions are but seldom seen. This observation holds true, particularly in regard to the larger tin measures, which are indispensable in large operations; but even when referring to graduated glass measures of one or two pints capacity, we find the apothecaries' system prevailing. Many druggists are in the habit of using these smaller measures without regard to the standard which they represent, considering that an ounce is an ounce by either system; others recognise a difference, but think it of too trifling a nature to be of practical importance. As far as an ounce, or a few ounces are concerned, this may be perfectly true, and, perhaps, allowable, but should the quantity reach a pint, or even less, the difference is quite appreciable.

The supposition that the imperial and wine ounces are alike, or nearly so, has led to the establishment of a rule, which is not only largely used in practice, but may also be found laid down by several authorities. *"To change imperial gallons, quarts, or pints into wine measure, deduct one-fifth, for the reverse operation add one-fourth."* The extreme simplicity of this rule, and the ease with which it can be carried into effect, have secured its almost universal acceptance; but even for the ordinary operations of buying and selling, it is far from being sufficiently exact, and for the compounding of medicines, it is altogether inadmissible, and unworthy of the employment of any claiming the name of pharmacist. There are many in the habit of using this rule, in compounding their medicines, who would doubtless resent the assertion that their liquid preparations—their tinctures—were altogether unreliable, and were lacking over 3½ per cent. in strength. Such would be, nevertheless, the fact. This is rendered evident by the following considerations :—

If an imperial minim be weighed, at a temperature of 60° F., and a barometrical pressure of 30 inches, it will be found to represent ·9114 of a grain; the minim, wine, under like conditions weighs ·9493; the difference between the two minims is therefore about 379-1000ths of a grain. By the time the ounce is reached this is augmented to a little over 18 grains; the ounce being equal to 455·69 grains, and the ounce imperial to 437·5 (the imperial ounce and the avoirdupois ounce are of the same value). The most important measure to the pharmacist is the imperial pint; this is equal to 8750 grains, while a wine pint weighs 7291·1 grains. The difference between 16 oz. wine, and 16 oz. imperial is about 291 grains, or over ⅝ of an ounce. This is not only an appreciable but a serious difference, and it is plain that if a measure, graduated according to the wine standard, be used instead of an imperial in making any of the stronger preparations, as *liq. strychnia*, or *liq. morphiæ acetatis*, that these preparations will be proportionately weaker; in the above instances the deficiency would amount to about two and a half grains in the pint.

If, in making large quantities of tinctures, or other preparations, the rule of deducting one-fifth be employed, the difference in some cases amounts to over a pound, in the quantity even of a few gallons. Some years ago, the writer constructed tables for converting the amount of solid ingredients prescribed to certain definite imperial measures, into the corresponding quantities of wine measure; one of these tables is now submitted, showing the amounts required for one pint, imperial, in measures up to ten gallons, wine:—

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* *Canadian Pharmaceutical Journal.*

TABLE FOR CONVERTING THE QUANTITIES ORDERED TO ONE PINT, IMPERIAL MEASURE, INTO THOSE REQUIRED FOR VARIOUS MEASURES OF THE WINE OR APOTHECARIES' STANDARD.

Quantity of substance to ONE PINT Impl. Measure.		Corresponding quantity to ONE PINT Wine Measure.		Quantity to ONE GALLON, Wine Measure.			Quantity to FIVE GALLONS, Wine Measure.			Quantity to TEN GALLONS, Wine Measure.		
oz.	grs.	oz.	grains.	lbs.	oz.	grs.	lbs.	oz.	grs.	lbs.	oz.	grs.
..	1	..	·833	..	..	6·6	..	..	33·3	..	..	66·6
..	10	..	8·332	..	..	66·6	..	..	333·2	..	1	229·0
..	30	..	24·996	..	..	199·9	..	2	124·8	..	4	249·6
..	40	..	33·328	..	..	266·6	..	3	20·6	..	6	41·2
..	60	..	49·992	..	..	399·9	..	4	249·6	..	9	61·8
..	75	..	62·490	..	1	62·4	..	5	312·1	..	11	186·7
..	100	..	83·320	..	1	229·0	..	7	270·3	..	15	103·1
..	150	..	124·980	..	2	124·8	..	11	186·7	1	6	373·4
..	180	..	151·976	..	2	324·8	..	13	311·5	1	11	185·5
¼	..	..	91·137	..	1	291·5	..	8	145·5	1	0	291·0
½	..	..	182·275	..	3	145·7	1	0	291·0	2	1	144·5
¾	..	..	273·412	..	4	437·3	1	8	436·4	3	1	435·4
1	..	..	364·550	..	6	291·4	2	1	144·5	4	2	289·0
1½	..	1	109·325	..	9	437·1	3	1	435·4	6	3	433·4
2	..	1	291·600	..	13	145·3	4	2	289·0	8	5	140·5
2½	..	2	36·375	1	0	291·0	5	3	142·6	10	6	285·0
3	..	2	218·650	1	3	436·7	6	3	433·5	12	7	399·5
4	..	3	145·700	1	10	290·6	8	5	140·5	16	10	281·0
5	..	4	72·750	2	1	144·5	10	6	285·0	20	13	132·5
8	..	6	291·400	3	5	143·7	16	10	281·0	33	5	124·0
16	..	13	145·300	6	10	287·4	33	5	124·5	66	10	249·0

ON COLD CREAM.

BY J. B. MOORE, PHILADELPHIA.*

CERATUM Galeni, Unguentum Refrigerans, or Cold Cream, as it is more popularly known, is of more ancient origin than many would suppose, having been invented by that learned and distinguished physician, Claude Galen, who was born at Pergamos, in Asia Minor, A.D. 131. The formula of this popular ointment has undergone many transformations since its birth, more, perhaps, than that of any other preparation in our officinal list. In fact, almost every one has his own peculiar way of making Cold Cream, and there are but few pharmacists who prepare this time-honoured ointment by the same recipe. Besides the numerous formulas that have been published in the various pharmaceutical journals, I find collected together, in the "Pharmacopœia Universalis," edition 1833, from the various Pharmacopœias of the world and other sources, not less than twenty-six. Nearly all of the old formulas contain lard as the base; a few have the addition of wax and suet. The first mention that I have found of the employment of the oil of sweet almonds and spermaceti, is in Coxe's "American Dispensatory," edition 1831. In a note, the author says: "Under the name of unguentum aqua rosæ, the U.S. Pharm., and of Phil., direct two ounces of oil of almonds, half an ounce of spermaceti, and one drachm of white wax, to be melted in a water bath, and two ounces of rose-water; to be stirred till the mixture is cold. The New York Pharm. has, we think, done well to discard such trumpery, at least, under any supposition of the *two ounces of rose-water being medicinal.*" So I presume that the present almost universal mode of making this ointment of oil of sweet almonds, spermaceti, etc., is the offspring of our own Pharmacopœia.

The names by which this preparation has been designated are almost as various and numerous as the formulas offered for its manufacture.

As a matter of curiosity, and to show to those who are not already aware of it, how this ointment was prepared in the days of *yore*, I will append a formula which I copy from an old and valued relic in the possession of the writer, a copy of an old London Dispensatory, edited by Nicholas Culpepper, published in the year 1650, and now nearly 220 years old. Judging from a survey of the contents of this book, I am forced to the conclusion that pharmacy at that period was *really* in its infancy. Many queer old formulas, with directions and observations by the author, couched in quaint and, now-a-days, ludicrous language and expressions are to be found therein.

I copy the formula, with the comments of the author, *verbatim et literatim*:—

"Unguentum refrigerans, Galenus.

"It is also called a cereclath.

"Take of white wax four ounces, oyl of roses omphacine a pound; melt in a double vessel, then pour it out into another, by degrees putting in cold water, and often pouring it out of one vessel into another, stirring it till it be white; last of all wash it in rose water, adding a little rose water and rose vinegar.

"A. It is a fine cooling thing (for what denomination to give it I scarce know) and exceeding good, yea super-excellent to cure inflammations in wounds or tumors."

The above, I presume, is the original formula of Galen.

I will now present a formula for Cold Cream which I have employed for several years with unusual satisfaction. It affords an elegant ointment and of good consistency, of sufficient firmness in summer and not too hard in winter. It also possesses the desirable quality of keeping well at all seasons. I consider it greatly preferable to that prepared with rose-water for popular use; and is also eligible as a substitute for the officinal ungt. aquæ rosæ for almost any purpose. Should the proportions given yield a preparation of too firm consistence in cold weather in some sections of the country, the quantity of wax may be lessened. The quantity and kind of perfume may also be varied to suit the fancy.

℞. Ol. Amygdal. Dulc., f℥xss.
Cetacei, ℥iij ʒvj. (Troy).
Ceræ Albæ, ʒx.
Ol. Rosæ, gtt. vj. vel gtt. x.

Melt together, by means of a water bath, the oil, spermaceti, and wax, and strain through muslin if necessary; stir constantly until it begins to thicken; then beat it well, and when it has become quite cool, add the oil of rose, and continue the beating process till the oil is thoroughly incorporated, and the ointment is of a snowy whiteness. Any stray portions that might unavoidably harden upon the sides of the dish should be removed, and rubbed perfectly smooth upon an ointment slab before admixture with the rest.

The true secret in making an ointment of this kind nicely consists in stirring and beating it well while cooling. A little extra labour bestowed upon this part of the operation will be well spent, and amply repaid by the enhanced beauty and elegance of the product.

A capacious porcelain evaporating dish should be employed, in which to prepare this ointment.

Special care should be taken in the selection of the ingredients, and none but fresh, sweet, and strictly pure should be used, and the use of the water-bath should never be omitted, as it precludes the liability of injury by heat.

Some pharmacists add glycerine to their Cold Cream, but I cannot perceive any advantage whatever in its use, and as it has no affinity with the other ingredients, it does not make as smooth or as handsome an ointment as can be made without it; and medicinally, I think, it adds nothing to the value of the preparation beyond the imagination.

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* Contributed to the *American Journal of Pharmacy*.

THE MEDICAL CREEDS OF THE UNITED STATES.

In the February number of the *Philadelphia University Journal of Medicine* we find the following editorial article, which may be read with profit on this side of the Atlantic:—

The *American Eclectic Review* enters a strong complaint against Eclectic physicians for not making more eclectic students, and thinks that if they would do their duty, a very much larger number might be recruited to the Eclectic ranks. It estimates that there are about seven thousand Eclectic physicians in the United States. In this, we think, they are most sadly mistaken, as we do not believe that there are twenty-five hundred respectable, educated practitioners in the United States who claim to belong to the Eclectic party in medicine; and from the very numerous letters we receive from those who formerly styled themselves Eclectics, the number will soon be materially less.

The truth is, the time has passed when educated and intelligent practitioners of medicine and surgery will be bound to medical dogmas, or become the blind advocates of medical sectarianism. What do they care about the fine-spun theories of Homœopathy, or the conglomerate garbage of modern Eclecticism, more than for the dogmas of Paracelsus, or of Mesmer and Pressnitz? What is true of practitioners is equally so of young men entering the profession. They do not wish to enter a medical college where a large portion of the teaching is devoted to the inculcation of the theories and speculations to maintain some medical party or sect. They prefer receiving their education where the science and art of medicine is taught in a catholic spirit, and where all the modern researches and discoveries are illustrated, leaving the sectarian schools to pursue their phantoms and exhaust their energies over the difference between *tweedle dee* and *tweedle dum*. This reminds us of an adventurer who entered the Philadelphia University the other day, stating that he was a delegate from the State of New York to the National Eclectic Medical Association, and was anxious to find the august assemblage; when we politely informed him that it was the first intimation we had of the existence of such a society. He replied that that was very strange, as a portion of the Eclectics of New York opposed the Newton monopoly, and had sent delegates to Philadelphia. We answered that we knew nothing of the matter, when he inquired if that was not the Eclectic College. We informed him it was not. He then wished to know if it was Homœopathic. We told him no. He replied that he supposed it must be Allopathic. We stated that it was not. He then wished to know what it was, when he was informed that it was a medical college, where the science and art of medicine was taught and learned, according to the most enlightened clinical experience and scientific researches of all the great minds of the profession irrespective of sectarian limits or party boundaries. He stepped back, took a survey of the building, and replied, *that* was strange. The poor fellow, if educated at all, was probably instructed in some narrow-minded, bigoted, sectarian medical college, and had never before conceived the idea that a great and useful profession could exist without a medical creed, or belonging to some of the modern medical isms of the day.

Mr. Alfred C. Wood, formerly principal assistant to Mr. Bird, chemist and druggist, Worcester-street, Birmingham, has commenced business as dispensing chemist at 30, Smallbrook-street.

Pharmaceutical Society of Great Britain.

EVENING MEETING, MARCH 2nd,*

MR. H. SUGDEN EVANS, PRESIDENT, IN THE CHAIR.

The minutes of the preceding meeting were read, and subsequent donations to the library and museum acknowledged. Attention was drawn to a sample of false Mannite on the table. It will be recollected that this was a subject of discussion at a late meeting. The adjourned discussion on Professor Redwood's "Notes on the Pharmacopœia," was then commenced.

Professor **Redwood** drew attention to two samples of *Linimentum Potassii Iodidi cum Sapore* on the table, the one from Mr. Smith, of Cheltenham, who had published a paper on the subject, in the current number of the *Pharmaceutical Journal;* the other from Mr. Francis. The great difference between them was due to the fact, that the one was made from a potassium, and the other from a sodium soap, or, in other words, from a soft and hard soap respectively.

Mr. **Long**, of Croydon, thought it would be advisable to assimilate the Camphor preparations of the London and British Pharmacopœias, and the Rose Infusions of the several Pharmacopœias. The differences in the various processes were very insignificant.

Professor **Redwood** reminded pharmaceutists of his request for hints, in reference to several preparations, *i.e.*, *Extractum Ergotæ;* and particularly more information was desirable in reference to *Emplastum Belladonnæ*, the objection to the preparation of which with alcoholic extract was, that the tendency to liquefy was then too great, difficulty being experienced in driving off the whole of the spirit.

The **President** had made *Lin. Pot. Iod. cum Sapore* with Castile Soap, as recommended by Mr. Squire, but found it liable to change by frost; it would, however, return to its original gelatinous form by heating. He did not obtain such a result by the use of ordinary soap, a fact which would seem to depend on the complete solubility of the one soap, and the incomplete solubility of the other.

Professor **Redwood** drew attention to Mr. C. H. Wood's recommendation to use pure oleic acid soap. He had not seen this soap, but thought it might, perhaps, be advisable to introduce such a soap into the Pharmacopœia.

Mr. **Porter** had made Liniment with both Mr. Wood's soap and Gibbs's, but had not succeeded so well as with soap bearing the ordinary brand.

Mr. **Martindale** referred to the fact that Iodide of Potassium crystallises out from the Liniment, and by friction produces irritation of the skin. Liniment made with powdered soap, containing less water, suffered no precipitation.

Mr. **Hills** had heard that the difficulties could be overcome by the use of equal parts of hard and soft soap.

Mr. **Carteighe** said, that the gentleman who had recommended the introduction of the Liniment into the Pharmacopœia had since acknowledged that he should have ordered curd soap. That made with soft soap had, however, the best appearance.

Professor **Redwood** admitted that the transparent gelatinous preparation was most elegant, but could not admit that it was so easy and simple a thing to take soft soap. One great objection to its use was the difficulty in getting a potassium soap into a neutral state, a sodium soap would always be preferable in this respect. Professor Redwood would, therefore, as formerly, suggest the use of pure oleic acid soap, such as that recommended by Mr. Wood, who had shown how almond oil, which is nearly pure oleine, could be saponified without difficulty.

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* Reported specially for this Journal.

Mr. Martindale made some remarks on the fluid preparations of Iodine, which he proposed to replace by two aqueous solutions, to be termed respectively *Liquor Iodi* and *Liquor Iodi Fortior.* He also objected that *Linimentum Iodi* had not "body" enough. Mr. Martindale also expressed the opinion that Squills should be used in the fresh state, and that in evaporating the ingredients of *Oxymel Scyllæ,* part of the virtue of the Squills was probably lost; hence it was advisable to use strong Acetum and pure honey, when no evaporation would be necessary. Fresh peel should also be used in making *Tinctura Aurantii,* and in that case, rectified spirit should be employed, as the juice would dilute it sufficiently. Plasters were rarely well made, the appearance being too much studied; moreover, there was a redundancy of such preparations in the Pharmacopœia, of which many could be replaced by lead-plaster. If doses must be mentioned, the minimum, maximum, and *poisonous* doses should be stated, as the present maximum doses were, practically, frequently exceeded. Mr. Martindale thought that the contents of the Pharmacopœia should be discussed *seriatim* at the meetings of the Society.

The President thought Mr. Martindale's last suggestion quite impracticable.

Mr. Gerrard, a student, asked, in reference to compound ointment of mercury, what temperature was to be employed in mixing the ingredients. He had also experienced difficulty in pulverising so large a quantity as four or five ounces of camphor. Mr. Gerrard also suggested that in the preparation of *Cataplasma Coniæ* the powdered leaf should be replaced by extract.

Mr. Groves, of Weymouth, complained of the absence of Chemical Tests in the Pharmacopœia; he had been unable to discover a test for glycerine.

The President supported Mr. Groves's complaint, and, in reply to a query by Professor Redwood, stated that samples of glycerine might answer the physical tests given in the Pharmacopœia, and yet be unfit for the preparation of the Glycerines of Tannic and Gallic acid, etc.

Professor Redwood was surprised that an opinion of the Pharmacopœia, so opposite to that generally current, could be entertained. There might, possibly, be isolated instances of insufficient information, but it appeared to Professor Redwood that it would be absolutely impossible to give all tests without unnecessary complication. Much must be left to individual knowledge and skill; and although, from time to time, additions might be made to the tests given by the Pharmacopœia, yet he never expected to see a Pharmacopœia which should guard against all impurities which are so constantly varying.

Mr. Porter considered that too much heat was used in making Syrup of Hemidesmus. He would propose that the aromatic principles be extracted by cold water, and the drug subsequently treated with hot water, as ordered by the Pharmacopœia. The solutions could then be mixed, and a superior preparation be thus obtained. Mr. Porter had frequently used a suspended bag in the preparation of gum tinctures, complete diffusion being thereby readily obtained.

Professor Redwood referred to the criticisms which had been passed on the dilute Nitro-Hydrochloric acid of the Pharmacopœia by Messrs. Tilden, Porter, and others. Professor Redwood had many times prepared the acid by the Pharmacopœia process, using, however, a bottle connected by suitable tubes, and containing distilled water, on the plan subsequently proposed, in a more complicated form, by Mr. Porter. Mr. Tilden had especially endeavoured to prove that the acid obtained by the Pharmacopœia process did not answer to the test ordered. Professor Redwood had, however, always found the acid he prepared to correspond with the number of alkali test-measures indicated by the Pharmacopœia.

Mr. Tilden remarked that it was impossible the acid should correspond with the test indicated, even were there no loss, as calculation would show that the numbers were theoretically wrong.

MEETING OF THE COUNCIL, *February 2nd*, 1870,[*]

MR. H. SUGDEN EVANS, PRESIDENT, IN THE CHAIR.

MR. HASELDEN, VICE PRESIDENT.

Present—Messrs. Bottle, Bourdas, Carteighe, Deane, Dymond, Hills, Ince, Morson, Orridge, Randall, Savage, Stoddart, and Williams.

The minutes of the last meeting were read and confirmed.

The lot for the next Council having been taken in the usual manner, the following were declared to go out of office, but are eligible for re-election:—[†]

Abraham, John, 87, Bold-street, Liverpool.
Bottle, Alexander, 37, Townwall-street, Dover.
Carteighe, Michael, 172, New Bond-street.
Edwards, George Dartford.
Evans, Henry Sugden, 60, Bartholomew-close.
Haselden, Adolphus F., 18, Conduit-street.
Ince, Joseph, 26, St. George's-place, Knightsbridge.
Morson, Thomas N. R., 38, Queen's-square, Bloomsbury.
Orridge, Benjamin B., 32, Ironmonger-lane.
Randall, William B., 146, High-street, Southampton.
Savage, William Dawson, 30, Upper Bedford-street, Brighton.
Squire, Peter, 277, Oxford-street.
Stoddart, William Walter, 9, North-street, Bristol.
Williams, John, 5, New Cavendish-street.

The following Members were declared to remain in office for the ensuing year:—

Bourdas, Isaiah, 7, Pont-street, Belgrave-square.
Brady, Henry B, 29, Mosley-street, Newcastle-on-Tyne.
Deane, Henry, Clapham-common.
Dymond, George, 17, Bull-street, Birmingham.
Hills, Thomas Hyde. 338, Oxford-street.
Mackay, John, 119, George-street, Edinburgh.
Sandford, George Webb, 47, Piccadilly.

The Report of the Finance and House Committee was presented, showing on the General Fund Account a balance in the Treasurer's hands of £755 7s. 3d., and on the Benevolent Fund Account a balance of £543 16s. 10d.; and submitting for payment accounts, and various items, amounting to £518 12s. 5d.

> Resolved—That the Report be received and adopted, and payments made.

With reference to the recommendation of the Committee to provide a "strong room" for the registers and other official documents, the matter was referred back to the Committee, with power to make the necessary alterations in carrying out this object.

The Report and recommendations of the Library, Museum, and Laboratory Committee was read and adopted.

The Report and proceedings of the Parliamentary Committee having been read and considered, it was moved by Mr. Hills, seconded by Mr. Morson,

> Resolved—That the said Report be received and adopted, with the exception of the "Reasons" prepared by the Committee for the abolition of the Patent Medicine Stamp and Licence.

Mr. Savage placed on the table a memorial signed by chemists and druggists at Goole and neighbourhood, to the effect that the removal of the Patent Medicine Stamp and Licence would be an unwise and impolitic act to the trade, and of no benefit to the general public.

Other letters of the same nature were read.

It was moved by Mr. Carteighe, seconded by Mr. Williams,

> That the reasons for the abolition of the Patent Medicine Stamp and Licence submitted by the Parliamentary Committee be received and adopted

Amendment—Moved by Mr. Savage, seconded by Mr. Orridge,

> That the further consideration of the Patent Medicine Stamp and Licence be postponed until after the Annual Meeting.

For the Amendment,—Messrs. Bottle, Dymond, Hills, Ince, Orridge, and Savage.

Against,—Messrs. Bourdas, Carteighe, Haselden, Randall, and Williams.

The Chairman declared the amendment carried, and proceeded to put it as a substantive motion.

The following amendment was then moved by Mr. Randall, seconded by Mr. Morson:—

> That the Commissioners of Inland Revenue be informed that, on further consideration of the question of the abolition of the Patent Medicine Stamp and Licence, the Council find among the body they represent such difference of opinion, that they are unable to make any strong recommendation on the subject; while at the same time they have no doubt of the very great importance of these laws, if not repealed, being more distinctly defined, and of their being prevented from being made a means of evading the Pharmacy Act in the sale of poisons.

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[*] From the *Pharmaceutical Journal* for March.

[†] Bye-laws, sect. 5, clause 3:—"Any person qualified to vote desirous of nominating any member for election as a member of the Council or as an auditor, shall give notice in writing, with the name and address of the nominee, and if for the Council, disclosing whether such nominee be or not a Pharmaceutical Chemist, to the Secretary of the Society, on or before the 24th day of March in every year."

For the Amendment—Messrs. Bottle, Bourdas, Carteighe, Evans, Haselden, Hills, Morson, Randall, Stoddart, and Williams.

Against—Messrs. Dymond, Ince, Orridge, and Savage.

The President declared the amendment carried, which was put as a substantive motion, and passed.

Resolved—That the Secretary be instructed to place a copy of the tabular form of Regulations, prepared by the Parliamentary Committee in reference to the sale and dispensing of poisons, in each number of the Journal and Transactions of the Society for March, and that copies be sent to the local secretaries for distribution among chemists and druggists in their respective districts; and the secretary was also instructed to furnish the publisher of the *Chemist and Druggist* with copies for enclosure in his next number.

Pursuant to notice, it was moved by Mr. Savage, seconded by Mr. Bottle,

That the certificate for the Preliminary Examination, according to original plan, duly authenticated as having been given on or before the 31st of August, 1869, be received and acted upon.

For the Motion—Messrs. Bottle, Ince, Morson, Orridge, Savage, Stoddart, and Williams.

Against—Messrs. Bourdas, Carteighe, Evans, Haselden, and Randall.

The President declared the motion carried.

Moved by Mr. Carteighe, seconded by Mr. Ince,

Resolved—1st. That the resolution respecting the certificates for the Preliminary Examination now passed be advertised in the notice page of the Journal for March and April.

2nd. That no such certificates be received after 1st May, 1870.

BENEVOLENT FUND.

Resolved—That on the Report and recommendations of the Benevolent Fund Committee, the following grants be made :—

The sum of £10 to a distressed Member in Jersey.
,, £10 to a distressed Member in London.
,, £20 to the widow of a late Member in Kent.

It was also

Resolved—That the Treasurer be requested to purchase £500 consols to the account of this Fund.

The Board of Examiners for England and Wales reported that they had during the month of January examined—

6	candidates	Major,	and passed	6
14	,,	Minor,	,, ...	12
47	,,	Modified,	,, ...	37
67				55

The Board of Examiners for Scotland reported that during the month of January they had examined—

1	candidate	Major,	and passed	1
3	,,	Minor,	,, ...	1
8	,,	Modified,	,, ...	6
6	,,	Preliminary,	,, ...	3
18				11

The President reported it had given him great pleasure to preside at this meeting of the Scotch Board, and to compare the mode of procedure in Edinburgh with that of the London Board.

Abstracts of Foreign Papers.

CHLORAL.

CHLORAL is still the subject of much investigation. As many French experimenters reject Liebreich's statement that chloral is decomposed by contact with the alkali of the blood, with the production, according to the researches of Dumas, of chloroform and formiate of sodium, and base their rejection on the ground that they do not find the physiological action of chloral comparable to that of chloroform. M. **Personne** has made the question a subject for study, and appears to have answered it satisfactorily. The results of his labours were published in the *Journal de Pharmacie et de Chimie* for January. Although the production of chloroform was not to be detected by the odour of the blood, or of the breath. M. Personne succeeded in demonstrating its presence by suitable chemical tests, a full account of which may be found in his paper. M. Personne questions the validity of the announcement made by M. Bouchut, that chloroform was to be detected in the urine after the administration of chloral. It appears that the latter had based his assertion on the evidence offered by the reduction of cupro-potassii salts by such urine. M. Personne shows that formiate of sodium alone reaches the urine, and that this compound effects the reduction of the cupro-potassic salt, whilst no satisfactory evidence can be obtained of the presence of chloroform.

The following is a *resumée* of "Observations on the Preparation and Physical and Chemical Properties of Choral and its Compounds," published by M. **Eug. Lebaigne** in the pages of *l'Union Pharmaceutique* :—

The existence of the following compounds is established by published investigations :

1.	*Anhydrous Liquid* Chloral . . .	$C_4HCl_3O_2$ *
2.	*Anhydrous Insoluble* Chloral, isomeric with the above	$C_4HCl_3O_2$
3.	Hydrate of Chloral	$C_4HCl_3O_2,2HO$
4.	Alcoholate of Chloral . . .	$C_4HCl_3O_2,C_4H_6O_2$.

The process indicated by Dumas [*Traité de Chimie Appliquée*, Vol. V. p. 601] is the best for the preparation of chloral.

The secondary products (hydrate and alcoholate) are most advantageously prepared by synthesis, that is to say, by the direct union of anhydrous chloral and water, or alcohol, the product being rectified over carbonate of lime.

Liquid Chloral, by reason of its constant acidity, odour, and the inconvenience attending its form as a fluid, should be excluded from use in medicine, and reserved as a base for the preparation of the secondary compounds.

The characters and properties of these different compounds admit of their being easily distinguishable one from another; but one reaction is common to them all, and that is, their decomposition in presence of hydrated alkalies with production of an alkaline formiate and chloroform.

These compounds, however, yield different proportions of chloroform :

Anhydrous Liquid Chloral . Anhydrous Insoluble Chloral .	} 81·0 per cent. of Chloroform
Chloral Hydrate . . .	72·2 ,, ,, ,, ,,
Alcoholate of Chloral . .	61·7 ,, ,, ,, ,,

From this point of view, if they owe their therapeutic efficacy to chloroform, they should vary in activity.

By decomposition of the alcoholate, not only is chloroform liberated, but also 23·7 per cent. of absolute alcohol, which might also possess important physiological activity.

CHLORAL PRESCRIBED FOR HOOPING COUGH.

In a communication to *l'Union Pharmaceutique*, by Dr. Ferrand, we find that chloral has been administered with great success in cases of hooping-cough. The ordinary treatment having failed to ameliorate the condition of three children suffering from that complaint, Dr. Ferrand prescribed syrup of chloral, one spoonful to be taken before dinner, one after, and one at bedtime; each spoonful containing about 25 centigrammes, or nearly four grains of hydrate of chloral. This treatment was successful, the children slept at night, and were less troubled in the daytime. The cures were soon complete.

ESTIMATION OF THE ALKALOIDS OF ATROPA BELLADONNA, AND DATURA STRAMONIUM.

By careful analysis M. N. **Gunther** has ascertained the amount of atropine in the roots, leaves, ripe and unripe fruit, and stalks of *atropa belladonna*, and of daturine in the seeds, stalks, leaves, and roots of *datura stramonium*. The atropine from the stalks of the former was obtained in the amorphous state, whilst that from the other portions of the plant was obtained crystalline. The daturine from all parts of the stramonium plant was procured in the amorphous form. The following figures represent the results obtained:—

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* Old Notation, C = 6, O = 8.

ATROPA BELLADONNA.

Parts of the plant analysed.	Quantity employed.	Quantity of alkaloid found.	Percentage of moisture.
Leaves	50 grammes	0·1016	75·7
Stalks	50 ,,	0·0211	71·1
Ripe Fruit	50 ,,	0·1064	74·6
Seeds	40 ,,	0·1338	18 2
Green Fruit	50 ,,	0·0985	79·76
Roots	64 ,,	0·0396	70·6
DATURA STRAMONIUM.			
Seeds	50 grammes	0·1276	29·8
Stalks	50 ,,	0·0092	70·8
Leaves	50 ,,	0·0384	74·9
Roots	34 ,,	0·0081	63·7

PURIFICATION OF COMMERCIAL SULPHIDE OF CARBON.

M. Cloëz purifies sulphide of carbon by means of the following process:—

The sulphide of carbon is placed in contact during 24 hours with 0·005, or ½ per cent., of its weight of corrosive sublimate in fine powder, the mixture being agitated from time to time. The mercuric salt combines with the substance, which communicates its bad odour to the sulphide of carbon, and the product subsides. The clear liquid is then decanted, and 0·02 of its weight of an inodorous fatty body added. The mixture is then distilled over a water-bath, at a moderate temperature, the vapour being carefully condensed. Thus purified, the sulphide of carbon possesses a somewhat agreeable ethereal odour, and can be employed in extracting oils, etc.

Sidney W. Rich.

Therapeutics.

TINEÆ, OR RINGWORMS.

To the March number of the *Practitioner* Dr. Tilbury Fox contributes an elaborate paper on the "Treatment of the Tinæ, or Ringworms." He enumerates nine varieties of vegetable parasitic disease of the skin to which the generic term tinae is applicable, but points out that the general principles of treatment should be very similar in all cases. His treatment is based on the consideration that the fungi, to be removed, it should be remembered, do not flourish upon healthy surfaces. Thin, fair, and pallid children are referred to as those most liable to be attacked by ringworm, and in very many instances, the sufferers will be found to have been in the habit of taking very little fatty matter; or, if taking it, to have assimilated it badly. Now, in such cases it is important, in order to alter the soil, and thus deprive the fungi of their food, to supply fatty matter to the system, either in the form of food or medicine, as cod-liver oil, first of all strengthening the digestive organs to perform better the process of assimilation. A few cases are indicated where arsenic may be of service; but, as a general rule, Dr. Fox prefers cod-liver oil to any other medicine for the general treatment. The local treatment to be followed is, to remove every particle of the hair from the parts affected and those adjacent, and night and morning, after thoroughly washing the head with soap and water—when the head is the part affected—to apply the remedy (which may vary according to the kind of tinea) and then to grease the scalp all over with plain oil or pomade. For chloasma, or tinae versicolor—the simplest form of ringworm—Dr. Fox recommends a lotion ʒss. hyposulphite of soda in ℥vj. water. Before applying, sponge the head with a little weak vinegar. In very old and extensive cases liquor potassæ may be substituted for vinegar. For tinea circinala use a solution of caustic in spirit of nitric ether (ʒij. to the ounce.), or ʒj. iodine in ℥j. oil of petroleum, or oil of tar, to be followed in two or three days (after the scar thus formed has cleared away) with an ointment of ammonia-chloride of mercury (10 to 30 grains to the ounce). The other and more serious cases referred to by Dr. Tilbury Fox are such as require skilful professional attendance, and it is, therefore, not necessary to enter into particulars of their treatment in this place.

Veterinary Notes.

BY W. HUNTING, M.R.C.V.S.

WEED.

The disease known to veterinarians as lymphangitis is called "weed" in Scotland, and "a shot of grease," or "humour," in parts of England. I choose the Scotch name because it does not, like the others, offer any stupid or erroneous explanation of the complaint. It is a disease almost peculiar to cart horses, most frequently attacks hard-working animals, and appears after a day or two's rest. Its frequent occurrence after the rest at the end of a week has earned for it the name of the "Monday morning disease."

The symptoms are lameness with heat, pain and swelling in the leg, generally a hind one. This swelling first appears high up on the inside of the thigh, but rapidly spreads downwards to the hock, or even below that joint. The swelling "pats" like dough under pressure, the impression remaining for some time after removal of the cause. The pain is very acute, slight violence causing the limb to be raised so as nearly to overthrow the animal. Favourable cases, under treatment, recover in a few days; but occasionally, from the severity of the attack or improper treatment, a permanent thick leg results, or portions of skin slough away, leaving sores of a very indolent nature.

To understand the treatment, we must know something of the nature of the changes occurring in the leg. In addition to arteries and veins, an animal body contains another set of vessels, running a similar course, principally on the *inside* of the limbs. They are called lymphatics, or sometimes erroneously, absorbents; they carry a fluid known as lymph. Healthy tissue—let us say a muscle—receives a regular supply of blood, from which material is thrown out for its sustenance; this supply is in proportion to the demand, hard-working muscles receiving more than those at rest. The duty of the lymphatics is to carry away any superfluous material not used by the muscle.

Nature, although generally regular, cannot always adapt herself to sudden changes. When once Nature gets into the habit of supplying a large quantity of material to a part for the repair of tissue, a sudden decrease of waste is not at once followed by a smaller supply of nutritive material.

In such a case the lymphatic vessels are overcharged, and may not be able to remove the superfluous material which collects in the tissues. This is just what happens in "weed," or "humour." A hard-worked and high-fed horse gets a rest, the usual food is taken, but there is not the usual waste of muscle; the material thrown out for repair is in excess, and the lymphatic vessels cannot remove the extra quantity. The treatment indicated by this description, then, is to promote absorption, as, by so doing, the whole train of symptoms, pain, etc., will abate for want of a cause.

First of all, then, give a dose of physic; this removes a considerable amount of fluid from the body, and thereby promotes absorption. There is another very powerful remedy, but it must be used with caution. I refer to bleeding. This is about the only disease in which I hold the operation justifiable. In all true cases of weed the patient has abundance of blood, though seldom fat, so that the great objection of debilitating the system is not so forcible; besides, nothing we can do has such a speedy and marked effect in promoting absorption. By some, local bleeding is recommended, but the effect we require is better obtained by opening the jugular, and many cases we meet are so swollen as to make it almost impossible to find the vein on the inside of the limb.

Warm water fomentations to the swelling are invaluable, but must be continued; to apply warm water for a few minutes and then allow the limb to cool, is worse than useless. Exercise should be given as soon as the animal is able to walk tolerably well, as, by the action of the muscles, the flow of lymph and blood in their respective vessels is accelerated, and it should be known that the blood-vessels play a very much more important part in the absorption of effusions than the lymphatics, which seem to have merely their special function of carrying lymph. Of course, diuretics are useful, and should be used. The food must not be very nutritious, and water need not be given in large quantities. Bran is perhaps the best article of diet.

Should the swelling, after the acute symptoms have subsided, show a tendency to harden and remain, some stimulant, as ammonia, oil and water, may be rubbed into the part with gentle friction—not in quantity to excoriate, but merely to the extent of a mild rubefacient. Should the skin slough and leave sores, they may be dressed with this mixture :—

Zinci Sulph., ʒij.
Aqua, ℥j.
Acid Carbolic, ♏xx.

Nearly all these cases may be prevented by the use of a little diuretic medicine, with some bran on Sundays and other rest days. Dropsical swellings of the legs and breast frequently occur in *debilitated* animals; they must not be confounded with "weed," as the treatment is diametrically opposite.

Dentistry.

NEW ALLOY FOR STOPPING TEETH.

A CORRESPONDENT of our excellent contemporary, the *Chemical News*, publishes the results of his examination of a new dental alloy, which is sold for the purpose of being used as the basis of an amalgam. He says it occurs in the form of rather coarse filings, nearly white. Warmed in an iron spoon, with a little mercury, it soon enters into intimate commixture with it. The warm amalgam, if then pressed in wash-leather in a pair of pincers, loses much mercury, and the dry amalgam thus obtained is ready for insertion into the cavity to be stopped. Its manipulation altogether much resembles that of the celebrated copper amalgam, and it seems to be quite as useful, though not so hard. But it possesses this advantage over the copper amalgam (which darkens greatly), that the new amalgam retains its whiteness in the mouth. On analysis, the original metal as sold gave :—

Tin	61·12 per cent.
Silver	38·76 ,, ,,
Copper, etc.	0·12 ,, ,,

Homœopathy.

THE DISTINGUISHING PECULIARITIES OF HOMŒOPATHIC PHARMACY.

WE give above the title of an important and interesting paper read before a special meeting of the Homœopathic Pharmaceutical Society, on the 8th inst., by Dr. MADDEN. The lecturer, as most of our readers know, has long been recognised as one of the ablest exponents of homœopathic principles, and his special knowledge and industrious research have induced the British Homœopathic Society to entrust chiefly to him the labour and responsibility of preparing an authoritative English Pharmacopœia for the guidance of the followers of this system of medicine. The object of this paper was to lay before the homœopathic chemists a sketch of the plan of the work, and to particularize some of its chief features. The pharmacopœia, we may add, on Dr. Madden's authority, is now in the press, and may be expected to appear some time in May next. We have already commented in the CHEMIST AND DRUGGIST on the details of the somewhat new process for preparing mother tinctures, whereby an exactly uniform strength, both of the active principle and of the alcoholic menstruum, is always secured. This a prominent feature of the new pharmacopœia. The object of the work is, that homœopaths shall, like allopaths, possess a standard which both physicians and chemists shall recognise, and it is to be hoped that all the members of both classes will unreservedly receive it as such, and thus avoid the confusion which now to some extent exists. For instance, when one receives a homœopathic prescription, unless the views of the writer of it be known, one can never be certain whether he is prescribing on the decimal or the centesimal scale, and this, in many instances, involves the discrepancy of, perhaps, a thousand-fold, perhaps ten million-fold, the strength of the attenuations ordered. Now, it is to be understood for the future that where the X or the C̄ is not expressly stipulated, the centesimal (the weakest) scale is to be assumed. At the same time, directions are given that in preparing the attenuations, the first two are to proceed on the decimal scale, and then to be followed by the centesimal. This will create no confusion in practice, as will be readily seen from one instance. The preparation of the attenuations of Mercurius Vivus, is as follows :—One grain of the crude drug is to be carefully triturated with 9 grains of sugar of milk, this process to occupy 40 minutes. The result is Trit. Merc. Viv. 1x.; and under this title this particular strength must be prescribed, or the next potency will be understood. 2x is made in a similar manner, using 1x in place of Mercury, and it is evident that the result is the same as Hahnemann's No. 1, which was the trituration of 1 grain of the crude drug with 99 grains of sugar of milk, the only difference being, that Hahnemann specified one hour as the time to be occupied in the trituration, while now 80 minutes are required. In the compilation of this homœopathic pharmacopœia the British Pharmacopœia has been taken as a guide as far as its descriptions and tests are concerned. For chemicals the new notation has been adopted exclusively, but both the old and the new names have been given in all instances. Unlike the British Pharmacopœia, the homœopathic pharmacopœia consists entirely of simple substances; not that compounds are entirely excluded from their pharmacy, but that, hitherto, only simple substances have been "proved;" and it is a principle with those who believe in the law of similars, to use no medicines except those which have thus been proved. It does not necessarily follow, according to homœopathy, that Dover's powder will have any effect at all similar to that of opium; nor, on the other hand, can it be concluded for certain that morphia will be homœopathic to the same disease as opium. Some other "peculiarities of homœopathic pharmacy" mentioned by Dr. Madden, referred to the processes for preparing these medicines. Especial importance was attached to the perfect cleansing of all utensils employed; and it was recommended to use a separate pestle and mortar for every medicine, which, as homœopathic pharmacies are increasing, open up a bright prospect for Staffordshire. Also, the microscopic and chemical testing of every substance employed, is rigidly insisted on. With regard to the tincture process we have before alluded to, we must make one correction in our previous remarks, as the Society have not been able to agree to adopt a strictly logical view of their attenuations. What is called the mother tincture is (according to the strength now fixed) exactly equivalent to a trituration 1x, and it seems a pity that it has not been so designated. The conservative view of retaining the present style, rather than upset old ideas, has overcome the reformers, but, henceforth, the strength of these preparations will be definite and uniform.

A vote of thanks proposed by the President of the Society (Mr. Ross), and seconded by the Treasurer (Mr. Turner), was warmly passed to Dr. Madden for his paper.

HOMŒOPATHY IN PARLIAMENT.

The *Monthly Homœopathic Review* has an energetic article on Sir John Gray's proposed " Medical Acts Amendment Act" now before Parliament. The object of the article is to urge homœopaths to exert their influence to get their system legally recognised, by the insertion of the provisions in this Act, which, in the event of the bill passing, would require that every candidate for a medical degree should be examined in the principles of homœopathy. Now, apart from the utter futility of such a proposition, we think our contemporary makes a claim which, with all liberality, we can only describe as preposterous. It would be just as reasonable to propose that candidates for holy orders should be examined in the principles of Mohammedanism or Mormonism. We say this quite apart from any opinion of the relative merits of the rival systems of medical treatment we may happen to hold. The *Review* holds that because a considerable number of persons trust in homœopathy, it should be thus recognised ; clearly, the same argument would apply with still greater force in the parallel case which we have suggested. By all means let the professors of both schools bring their systems to as great perfection as possible as quickly as they please, and we should be sorry to see homœopaths hindered in the least from pursuing their investigations ; but no legal enactment will amalgamate the different schools of medicine into a happy family, and we are not sure that it would be to the interest of the public that they should become so. It may be liberal, it may, perhaps, be wise, for an allopathic doctor to make himself acquainted with the teachings of Hahnemann, and with the practice of his followers; but from his point of view—and it is from this position that the question should be regarded—it would be as sensible to compel him to study the medical theories of the Chinese.

HOMŒOPATHY IN AMERICA.

A few items of intelligence from the United States show that the faithful there are something more than allopathic in the energy with which they are ready to " back their opinions." The " Homœopathic Hospital Fair " (whatever that may be) was held at Philadelphia, and realised over 15,000 dollars. The inhabitants of Chicago, too, want a Homœopathic Hospital, and at the first suggestion have subscribed 30,000 dols. The Americans have coined a new name for the followers of Hahnemann, which, contrary to their usual custom, is more diffuse than the usual titles. The three names now in vogue are, homœopath, homœopathist, and homœopathician, the last being the novelty.

Photography.

PRACTICAL HINTS.

THE following notes are translated from the last number of the *Photographisches Archiv* of Berlin :—

Ordinary phototypes can be made to look very like albumen pictures by a coating of varnish or gelatine.

Negatives from which carbon pictures are to be taken may be advantageously provided with a black border. The impression will by that means have a white border, and will be the better developed and transferred.

In hot countries, in order to get clear, unclouded negatives, the silver bath is strongly acidulated with nitric acid. Four drops to a twenty-ounce bath do not in the least lessen its sensitiveness.

LATE HOURS OF BUSINESS AND THEIR EFFECTS ON THE PROGRESS OF PHARMACY.

BY BENJAMIN ROBINSON.*

A MAN who stands up to tell an old story is placed at a disadvantage. He runs the risk of being prosy and not listened to. A startling proposition, even though a baseless one, would gain the proposer a hearing, when the narrator of oft-told truths would put the audience to sleep. Professionally, we might speak of a stale subject as having a narcotic influence ; and the man who treats it, however sanguine he may be of avoiding a " catastrophe," is in danger of finding that he has administered an opiate through the auditory passages. I feel that I am almost in this position. I have to deal with a topic of a commonplace character, to plead a cause which has found many another and many a more powerful advocate. I have to tell you old and admitted truths, supported by worn-out arguments, and have to perform the office without pretending that I can execute the task in any brilliant or novel way.

It is true that the subject of late hours of business comes home to each of us. We are yet among the unemancipated, still under the depressing and evil influence which early closing, that blessing to modern industry, is intended to chase away. The labourer and the artisan have obtained a reduction of their working hours—the banker's clerk, the warehouseman, the draper's assistant, and many others, have had the luxury of shorter hours and the Saturday half-holiday added to the Sabbath of rest. The chemist, the chemist's assistant, and the chemist's apprentice are just where they were. Working six days a week, and during portion of the seventh, their hours are as long, their labours as irksome as ever. When we come to look for an explanation of this state of things, we find some remarkable anomalies. Beyond saying that custom excuses custom, that it is so because it has been so, there is very little to be said in favour of the existing condition of affairs. On the contrary, there are the best grounds for contending that the chemists ought to have led the way in the reform. The draper might excuse himself for having his premises open to a late hour with the plea that his window was a temptation to purchasers, and that people often bought from him articles for which they had no immediate requirement, and which they would not buy if the opportunity was not given " just while they were in the humour." Ladies often get bonnets which they could do without, but which they take a fancy to because they look pretty and are marked cheap. The longer the shop is open, a draper might say the more people are influenced by the temptation. But no one ever sees man or woman gazing admiringly at the window-display of a chemist, and I never yet heard of a man who found he could do with a Mather's plaster, just because, seeing it exposed, he thought it had a tempting appearance and was a great bargain.

The chemist supplies the absolute wants of humanity, and those wants are not increased by an extension of the hours of business. From this point of view, therefore, there are reasons why the chemist's shop should be closed, even when the draper's was open. Yet what is the fact? Long after most other respectable tradesmen have suspended business, the chemist, his assistant, or his apprentice, is to be seen at his post; and the clerk or the draper's assistant returning homewards from two or three hours of pleasure, observes the druggist's light and the jaded dispenser of medicines, who needs recreation and relaxation far more than those whose brains are less severely taxed, still behind the counter. Now I contend, first, that there is no need for these long hours of business; secondly, that it is absolutely necessary in the interests of pharmaceutical science, that a change should at once be made; and thirdly, that the difficulties in the way of such a change are far from being insurmountable.

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* Read before the Manchester Chemists and Druggists' Association, March 4th. Communicated to this journal by the Honorary Secretary.

The only excuse for keeping open the shop of a chemist, or indeed, a shop of, any kind, until a late hour is, that the public require certain facilities for the supply of their wants, and the more imperative those wants are the greater should be the convenience afforded. Now, there is no doubt that a man may at times suddenly require the aid of a chemist, and it may be contended that if the chemist closed at eight o'clock a man in the condition referred to would at nine o'clock find himself awkwardly situated. This is, no doubt, true enough; but if it proves anything it proves that the chemist ought never to close at all. The chemist closes, say at ten; what right has he to do so, when a couple of hours later, an urgent case may require his assistance? In fact, the contention that to meet cases of necessity the chemist must keep his shop open, and remain, either in person or by deputy, at his post until ten o'clock, has no more practical application than would the demand have that he must not fasten his doors till midnight. We agree first, that a chemist has a right, irrespective of exceptional demands upon his attention, to put up his shutters and lock his front door. When we come to decide what the hour shall be, we admit that the public have a just claim to reasonable accommodation. If a chemist remains behind his counter after that claim is satisfied, he is doing an injustice to himself, and a greater injustice still to those in his employment. I estimate that there are in Manchester and Salford between five and six hundred persons engaged, either directly or indirectly, in the dispensing of medicines. Is it fair to ask that they, or a large portion of them, should be detained for two or three hours beyond the time most other tradesmen close, on the plea that perhaps a few cases of emergency may occur in the two boroughs? It does not follow that because the chemists agree in fixing an earlier hour for putting out their lights, that every one of them leaves his premises the moment the doors are locked; it is no greater hardship upon one suddenly attacked with illness at eight or nine o'clock, to have to reach a chemist through his private door, or by means of his night-bell, than it is now, upon such an one at midnight. Inconveniences and emergencies of this kind are companions to our existence, and there is no reason why the public should not accept the possibility of their occurrence a couple of hours earlier, in order that an inestimable boon may be conferred upon some half thousand chemists and chemists' assistants, who are now condemned unnecessarily to stand behind the counter waiting, as Mr. Micawber might wait, "for something to turn up."

I put aside, as not worth considering, the convenience of those who delay their shopping until a late hour. People who could obtain what they want at six o'clock, but postpone their purchases until nine or ten, knowing that the chemist's shop will not be closed before they visit it, are, after all, a pliable people, and would almost conform to any custom; they do not want us to remain open till ten o'clock, they only take advantage of the arrangements we have chosen to make. The public do not want the accommodation supposed to be afforded by late closing; they avail themselves of it because, without being asked for it, we have given it to them. Close our doors two hours earlier, and we should not lose a single customer, nor find a shilling less in our *tills*.

I have been discussing this matter in what may be regarded as the least important of its phases. I have been speaking of the advisability of early closing as a matter of policy; I now have to urge it as a question of urgent and unavoidable necessity. The time has gone when any charlatan can place a pestle and mortar over his door, and call himself a chemist. The chemist's real "sign" now is his diploma from the Pharmaceutical Society. Government, for the public safety, have demanded some assurance that a man who has in his possession articles which, if dispensed by careless or incompetent dealers, might inflict serious damage upon members of the community, *is* qualified for the work which he undertakes. The law is now imperative; and the young men who have to submit themselves to this trial have a right to ask for the time which is essential to a fit preparation for the ordeal. What are the present general business arrangements? The shop is opened between seven and eight o'clock in the morning. From that time until nine or ten o'clock at night, constant application and mental and physical exertion are required to meet the wants of the public. Often the unfortunate apprentices are allowed barely sufficient time to swallow hurriedly each meal. This "programme" is not for a single day nor two days; it is the pupil's rule of life, week after week and year after year, during the whole term of his apprenticeship.

There are a *few* employers who may be regarded as honourable exceptions, and who allow a portion of time each week to the apprentice for mental improvement such cases, however, are so very rare, that we are liable to lose sight of them.

It is true that we in this city have provided classes for our young men, to assist them in learning Latin, Chemistry, Materia Medica, and Botany, and that we allow them to attend these classes *one* night each week, for the space of *one hour*. This arrangement, however, only makes the case against late hours of business still stronger, and the necessity for relief more apparent. I ask, in all sincerity, what progress can be made under present conditions? Is it possible that the wearied apprentice, after thirteen or fourteen hours' daily toil, can take up to study a scientific book without going to sleep over it? I am not at all surprised at the meagre attendance of our apprentices to the various classes at Owen's College. Where is the time necessary for the student to follow up during the week the instruction he received from his teacher? If there is to be any permanent progress, it must be made in practically travelling over the path which the teacher has indicated. The valuable facts revealed by chemistry must be demonstrated in the laboratory. The delightful pursuits of botany must be followed in the fields. The indispensable truths of Materia Medica must be sought for among the resources of the shop. A systematic course of study must be marked out. Chemistry might occupy the student's spare time during the winter months; he ought to be enabled to give at least two hours every alternate day to reading, with experiments. I cannot too strongly impress upon the minds of my young hearers, the necessity of illustrating every chemical fact by experiment, and symbolically noting every decomposition. Botany and Materia Medica may occupy his attention during the summer. He might then take excursions into the country, provided with a tin collecting-box and a strong knife. There let him collect as many specimens as he can, noting the particular habitat of each plant. These he might dissect and examine at home, when time and opportunity allowed. I would urge upon all students to make collections of dried plants, representing the flora of the neighbourhood. Such collections would be a source of interest, and, when years had passed by, would form a valuable *souvenir* of many happily-spent hours. Three or four years, employed as I have indicated, would place the apprentice in a position to compete successfully for the Pharmaceutical prize, and in the end would give us a race of intelligent, well-qualified pharmaceutists, who would delight in rooting out many evils that now exist, and using every available means to elevate the trade to the standard desired by all well-wishers. Before the law made the change, the apprentice's course was easy enough. All he had to learn, of necessity, were the names, uses, and prices of the drugs which his employer retailed; at the end of his term he received his indentures, may be, he commenced business; there was no test required, even of this knowledge, and there never would be any, unless some gross and fatal blunder revealed his ignorance. The law has made this ignorance impossible; but the customs of the trade have done very little to bend themselves so as to meet the altered state of affairs, and afford to the apprentice the means of acquiring the knowledge requisite to become a recognised member of the trade.

Of the vast number of young men who, during the past twenty years, have been turned out "full-fledged" chemists, how many of them had really studied, and intended to pursue the study of the science they professed? Have not an immense proportion of them appeared content with the mere nominal qualification. Who knows how many a chemical genius has been repelled from his vocation by the sickening tedium of long hours and the absence of opportunities for becoming acquainted with the fact that there is a bright side to the picture which, to him, looked so dark. We all know, either from experience or observation, the fascination which chemistry has for the student, when once the study has been fairly entered upon. We know, too, that no science is more profitable, not only to the student, but to mankind. We do not know how many intelligent lads, if taken by the hand and allowed time for the improvement they sought, might have rivalled the late Sir Humphrey Davy in the beneficial discovery of truths now unknown to us, *have* been terrified at the very name of chemist, when they found that it frequently meant putting up the last shutter at ten o'clock p.m.

It may serve to help us to a conclusion in this matter if we take a glance at the state of affairs abroad. It is generally admitted that chemistry and pharmacy in this country do not occupy the same prominent position as they do on the Continent. What are the causes of this? Is there something defective in the mental condition of the people of England? Not at all. The causes must be looked for elsewhere. The first, and a very prominent one, is, that we as instructors of youth have been more or less guilty of not paying sufficient attention to the kind of education a boy had received before taking him an apprentice. I heard, only the other day, of a chemist who has *three* apprentices, and not one of them is acquainted with the Latin language. These are the men who bring disgrace upon the trade, and prevent it raising its head above the level of a mercenary occupation. I have received a letter from a German friend, who informs me that in his country, *before* a boy becomes an apprentice to a chemist, he must pass an examination in Latin, Greek, arithmetic, history, etc. Now, one who has undergone this examination is already provided with a cultivated mind, familiar with and trained to habits of study, which are of immense advantage to a youth entering upon a scientific course of instruction, and enables him to commence with a confidence that generally inspires success. The hours of business there are in striking contrast to ours. They open shop, or rather pharmacy, at eight o'clock in the morning, and close at seven o'clock at night, so that every apprentice has the opportunity of studying two or three hours daily. Then, again, before a chemist can commence business on his own account, he must have been three years an assistant, and pass a University examination which occupies three months. With such admirable regulations, and such great advantages, is it to be wondered at that Continental chemists carry off the palm in scientific excellence?

Now, why cannot we in this city and its neighbourhood do something to break asunder the bonds that restrain our liberty and cripple our best faculties. Let each put his shoulder to the wheel, determined to give every assistance to bring about a more cheerful state of things. Let us sink as beneath our notice the petty, narrow-minded jealousy which prevents us closing our shops at a reasonable hour. Let us give our young men the opportunity for two or three hours, daily study, and provide them with the means of practically carrying out the instructions which they receive in their classes. I believe that in the majority of establishments, a room, or even a cupboard, might be set apart where our apprentices might keep all the necessary tests, reagents, and inexpensive apparatus to enable them, with the assistance of one of the numerous text-books, to acquaint themselves with a regular and systematic course of chemical analysis. I am satisfied that there is no branch of our trade so useful, interesting, and profitable as a thorough knowledge of analysis. It furnishes the key to many doubts and suspicions, and reveals the presence of all adulterations.

In bringing forward this subject to-night, I have hopes of hearing not only the necessity of early closing admitted, but of seeing before long effect given to the admission. I am fully convinced that every chemist here might close his shop at eight o'clock; and mind, when I say "close," I use the word in its extreme meaning. If a chemist puts up his shutters and extinguishes his window lights, and leaves the shop gas to shine through a glas door or fanlight, he is as much open as if his windows were uncovered, and his coloured globes dazzled the passer. I mean that the shop should be locked and untenanted for the night. As far as I can learn, there are very few chemists who could not close at eight o'clock, the only difficulty in the way being that some other chemist in the neighbourhood keeps open till nine or ten o'clock. It would, of course, not be fair to ask the one to suspend operations before the other. The arrangement, therefore, can only be effected by a common understanding, strictly and honourably observed. Let there be unity of action in making the arrangement, and loyalty to each other in carrying it out, and there need be no delay in obtaining for ourselves that which, once having, we should recognise as a blessing so inestimable, as to make us wonder that we had deprived ourselves of it so long.

THE PROXIMATE ANALYSIS OF PLANTS.

BY GEORGE BROWNEN.*

Our subject to-night is a very important one, though but little understood by pharmacists: it is the link between two sciences, and, like "correlative links," it requires a knowledge of the laws or principles of each science so joined together. To be successful analysts of plants, we must be botanists as well as chemists; and though my object to-night is the chemical rather than the botanical, let me first point out a few things that will show the value and necessity of a knowledge of botany.

A plant is submitted to us for analysis; we see at once it is a compound structure, and belongs to organic nature. We might waste our substance, time, and money, testing at random for definite principles, etc., while the results of our testing may be erroneous, for our solvents or tests may have produced fermentation or decomposition. If our plant belonged to the *Rosaceæ* or *Lauraceæ*, cold water must not be used, or amygdalin and emulsin will act on each other, and form prussic acid, a non-natural product. So, again, if we have a plant of the mustard family, potassium myronate, and myrosin will, with the same agent, develop a sulphuretted oil. A knowledge of systematic botany will, in both these instances, sound a warning to us, and in other cases the characteristic properties of the order are great helps or safeguards to our search; thus, *Ranunculaceæ* has an acrid; *Papaveraceæ*, a narcotic juice, both orders, with few exceptions, possessing strong poisonous principles; *Loganiaceæ* has its powerful poisons; *Cruciferæ*, its sulphur, *Labiatæ* and *Umbelliferæ* have their volatile, and *Oleaceæ* its fixed oils; *Convolvulaceæ* has purgative gums, and *Cinchonaceæ* astringent bitters. I might still add to this list, but these instances are enough. Then, again, the parts of a plant are often extremely different in composition. We often find fats and oils in seeds and fruits, sugars and pectin compounds in fruits, alkaloids and glucosides in barks, gums and resins in woods, and starch and acrid principles in underground stems and corms. Thus, a knowledge of botany enables us to ally a plant to its own order, and to guard against the errors, etc., into which we might otherwise fall.

Our real work now begins. It is necessary to obtain several pounds (it is useless beginning with less, if our analysis is to be complete) of the fresh plant, gathered when its principles are supposed to be fully developed, and each specimen wiped carefully dry, weighed, and dried. The latter operation requires great care, for if the specimens are dried open to various influences, or with too great a heat, we may lose or change some object of our search. The best plan is to cut or slice our plants, and place them in a warm, dry place—a large still or retort will sometimes do,—and the contents of the receiver tested for volatile products; the dry substance is then to be powdered. A difficulty often arises here; our plant may be oleaginous, resinous, or tenacious, in consequence of some gummy constituent. These we must remove by hot or cold expression, or extraction by some solvent, as ether, chloroform, or carbonic sulphide. Our marc may then be pulverised, and divided into two portions—one to be tested for ash or inorganic constituents, the other for the organic compounds; the manipulation and products of the last-named is our subject for to-night. I have obtained the best results by packing the powdered plant in a percolator, and percolating slowly with "ether purus." The percolation, as a general rule, should be continued till our percolate is three-fourths the weight of the substance percolated—*i.e.*, if our powder weighed 1 lb., we should percolate to 12 fl. oz. This remove, and mix with the ether solution, if we were forced to use this solvent before powdering, and call this the "ether extract." Next pour on the percolator alcohol; allow it a short time to diffuse through the mass, then percolate to another 12 oz., which remove as the "ethero-alcoholic extract"; continue the process for an alcoholic extract, then add dilute alcohol for a proof spirit extract, water for cold water extract, hot or boiling water for hot water extract; and now we shall find it better to divide our marc, and percolate one portion with water acidulated with sulphuric acid, and the other with water rendered slightly alkaline with caustic potash. Sometimes it may be necessary to percolate also with acidulated or alkaline alcohol; but if the first portions which pass through are not rendered turbid by neutralisation, we can finish this part of the process.

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* A paper read before the London Chemists' Association, January 20.

We have now obtained eight, perhaps ten, "extracts" of the vegetable matter.

In some instances in which volatile oils are known or suspected to exist, we may distil a portion of fresh plant in the usual way for volatile oils; or by careful evaporation of our ether extract, and distillation with water, we may get a larger product of volatile bodies.

These volatile oils may now be tested by potassic bisulphite, as aldehydes form crystalline compounds with this salt, setting the hydrocarbons or ethers free. Ethers may be decomposed, and their acids separated with baryta or lead oxide. Distillation will now bring over oxy-oils, or hydrocarbons, which may be known by their action on potassium, or by distillation with soda-lime, which decomposes, the oxy-oils, but has no action on hydrocarbons.

The sulphur oils may be tested by potassic plumbate or oxidised with nitric acid, and then tested with baryta for sulphuric acid.

The contents of our retort used in distilling the residue of the ether extract for volatile oils may consist of three layers—oily, solid, or watery. The oily may be tested, according to Jacobson, for acids by dry rosaniline; and the glycerides have their acids separated for testing, as barium, potassium, or lead salts. The watery fluid may be tested by phospho-molybdic acid (Sonnenschein's test), potassium iodo-hydrargyride (Nesseler's test), potassium and cadmium iodide (Marme's test)—for alkaloids, glucosides, and some acids; caoutchouc is precipitated from the ether extract by dilution with alcohol. The solids may be examined for resins, etc.; they may be acid as colophony, or neutral as guaiacum. M. Sacc, in *Ann. de Chemie.*, 1869, published the action of various solvents and tests on resinous, waxy, and fatty bodies, showing that mostof these known substances may be separated and identified.

As oleography is a subject further on in this session, I shall only mention it.

The ethero-alcoholic extract must be tested in the same way, as it may contain the washings of the ether process with some substance rendered soluble by means of alcohol.

The alcoholic solution contains various extractive matters, resins, gums, and colouring matters, insoluble in ether. These must pass the testings already described. Our ether and alcoholic extract will often contain the colouring matters of the plant. Fremy and Fillhol *Comp. Rend.*, have shown that chlorophyll is changed by some bases to a beautiful yellow, which, on the addition of ether and hydrochloric acid, splits up into a blue and yellow, which they think form chlorophyll.

If our solution is acid, it must be neutralised by potass, the precipitate (if any) examined, and the clear liquor tested for bases. Sometimes it is better to add a solution of alum and precipitate with liq. potass. the alumina carrying down some acid principles and colouring matters. This solution will give us the last of the oily or fatty series. They may be saponified, and their acids, as lead, barium, or silver salts, examined and determined.

Glucose and its allies may be tested by the copper test, or, fermented with synaptase, to yield alcohol and principles; thus, salicine is shown to be composed of saligenine and glucose.

Some free acids and acidulous salts may be dissolved out, as malates and aspartates. When their solutions are slowly evaporated, they form crystalline compounds of great beauty for the polariscope; nearly all these natural acids, etc., rotate a ray of polarised light, while some produced synthetically are devoid of such power.

Our weak spirit extract will contain, of course, some of the substances we have just described, and will require the same treatment, but it will also contain more protein substances; these may be thrown down by strong alcohol, and examined.

Colouring matters, bitter principles, etc., may be removed by animal charcoal, and re-extracted by strong alcohol, when they interfere with our tests.

We now come to our watery solutions, hot and cold. They both contain saline constituents of the plant. Gummy and albuminoidal substances are extracted here. The cold solution may give a deposit of starchy matters, requiring the aid of the microscope. The hot solution is often soapy or gelatinous, or has a deposit of pectin compounds. These solutions may be tested or separated by fractional precipitation, as lead salts, and their optical properties, or fermenting or reducing powers may be tested.

Our acidulated solution may contain alkaloids, etc., which were in an insoluble condition; the solution should be neutralised by potass, and precipitated by one of the alkaloidal tests.

The potass extract may then be tested with a solution of potash alum or plumbic acetate. Alum, in many instances, may be exchanged for baric hydrate, and the baric salt decomposed by sulphuric acid.

The substitution of alcohol for water sometimes serves to extract bodies only slightly soluble in water.

We have now robbed our plant of its chief principles, but the great bulk of its composition remains. Maceration in water and careful elutriation will serve to separate the remainder of the starch granules. Iodine is its most delicate reagent; whether "iodide of amylum" is a definite chemical compound, I will leave for your future investigation.

The remainder of our vegetable substance consists of cellular tissue or lignin. MM. Fremy and Terreil (*Chem. News Abstract*, March, 1868) communicated a memoir to the French Academy, on the analysis of this substance. They recognised three substances in lignin. The first insoluble in sulphuric acid, changed by chlorine, and insoluble in alkalies; they called it "the ligneous cuticle;" M. Hartig calls it "eustathe." The second is a substance dissolving and blackening sulphuric acid; and the third is pure cellulose, dissolved without colouration.

We have thus rapidly glanced at our subject. Some analysts, as Rochleder, reverse our order of proceeding. No plan, however, can be complete while the central parts of three-quarters of the globe remains unknown to us, and uncertainty still exists of the origin of some of our medical substances; but as science and civilisation advance, many of the errors we have counted truth may be swept away. But we need not be discouraged; through darkness, we have sometimes to grope to the light. The effect of our blunders are not permanent; truth must ultimately prevail. The powers, secular and spiritual, and Œcumenical Councils, have, or possibly may interfere to bar advance. But a dog may bark at the sun, as the Chinese say; it won't affect its light. But if each of us takes his place, and does his work, our light will be progressive, and some generation will hail perfect day.

Lastly, take, as a closing example, the effect which our present knowledge of plants has had on our national Pharmacopœia. We have removed inert or fermentable albumen from our extracts; our infusions are separated from their troublesome starch; a better and more representative class of extracts are produced by the aid of spirit; our syrups are made more stable; ammonia, with acids, resins, and oils, gives valuable tinctures; and last, but not least, Groves (*Ph. Journ.*) assures us that we have unwittingly been making our Haust. Nig. on scientific principles, as the cathartate of magnesia is one of the few soluble salts of senna.

Errors still exist. Right them when you can, remembering charity and the advice "The Cornhill" is giving monthly—"Put yourself in his place."

NOTES OF NOVELTIES

SYRUP OF CHLORAL HYDRATE.

THE value of chloral hydrate as a medicinal agent has been so unanimously acknowledged by the profession in America and on the Continent as well as in the United Kingdom, that it was time to bring forward a pharmaceutical preparation of it, which should offer a convenient form for its administration. The syrup prepared by Messrs. Ferris and Co., of Bristol, is not only useful in this respect, but it has another great advantage, in that by the judicious combination of balsamic ingredients the acrid taste of the chloral is covered, and the syrup presents a rather pleasant apple flavour. It is white and clear and perfectly stable, and will, we doubt not, become a favourite preparation. Each fluid drachm contains ten grains of chloral hydrate, and this is a suitable dose in cases of whooping-cough, to be repeated every four or six hours. For a hypnotic dose from two to four drachms are required, according to the patient's age.

POOLEY'S UNIVERSAL CATTLE CONDIMENT.

THE preparation which Mr. Pooley offers under the above name is likely to give satisfaction wherever it is sold or used. It is said to be an excellent addition to the food of all kinds of cattle, horses, etc., and to be an effective promoter of digestion. It is sold in penny packets or in bulk, and the dealer is allowed a handsome profit, as will be seen by a reference to our advertising columns.

REVIEWS

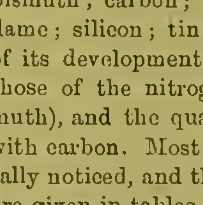
Chemistry for Schools: An Introduction to the Practical Study of Chemistry. By C. HAUGHTON GILL, Assistant Examiner in Chemistry at the University of London, etc. With 100 Illustrations. London: James Walton.

THOUGH the scientific book market is glutted with elementary treatises on chemistry, Mr. Gill's excellent manual undoubtedly supplies a want, and has intrinsic qualities that cannot fail to sustain it through the struggle for existence by which the natural selection of standard educational works is effected. Text-books for chemical students abound, but very few of them satisfy the requirements of school-teachers. As a rule, those associated with great names cannot be recommended as class-books. A chemical philosopher will ride his particular hobby even in the school-room, and his exposition of the fundamental facts of chemistry must reflect to some extent his pet theories. Moreover, the experience of a Professor does not necessarily include that of a school-teacher, and arguments or illustrations adapted to the understanding of adults will not arrest the wayward attention of boys. If the characteristics of good school-books are wanting in some of the best of our modern chemical treatises, we need not seek them in those imperfect handbooks which seem to have been produced in accordance with a conviction that the crown of chemical study is Matriculation. These instruments for cramming belong to Charles Lamb's category of "books which are no books—*biblia a-biblia*," and are certainly not adapted for the scientific training of youth.

A text-book of chemistry for schools and junior students need not embrace a very wide field of knowledge, but the ground selected for examination must be clearly and boldly mapped out. The facts given should be arranged in a perfectly systematic manner, and their application to matters of daily experience should never be overlooked. In fine, the work should be lucid, methodical, authoritative, and interesting.

Mr. Gill's *Chemistry for Schools* is evidently the fruit of practical experience in the difficult art of teaching, and the originality and thoroughness of the work are revealed in every page. The author in his preface states that the object of the work is "to supply a direct means of training the mind in habits of correct observation of facts, and of accurate reasoning from facts to generalisations; in other words, to cultivate scientific habits of thought. It is designed to set forth the methods which should be pursued in developing a knowledge of specific facts relating to the composition and changes of matter, and in endeavouring to group the facts so obtained into a consistent system by a chain of reasoning called a 'theory,' thus constructing the elements of a science of Chemistry." The execution of the work fully justifies this definition of its object.

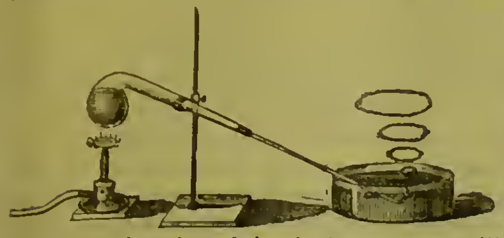
The book opens with a series of general explanations suggesting the *notions préliminaires* of French scientific treatises, and in the next chapter the student commences his course of experimental investigation and systematic induction. The headings of the chapters will indicate roughly the course pursued:—Nature of combustion, oxygen; nitrogen and air; water and hydrogen; composition of water by weight and volume; chlorine and its compounds; bromine, iodine, and fluorine; relations of the three elements, chlorine, bromine, and iodine; sulphur, selenium, and tellurium; ammonia; oxidised compounds of nitrogen; phosphorus; arsenic; antimony; bismuth; comparison of nitrogen, phosphorus, arsenic, antimony, and bismuth; carbon; coal gas, and nature and structure of flame; silicon; tin; boron; the atomic theory, and some of its developments. The only metals fully described are those of the nitrogen group (arsenic, antimony, and bismuth), and the quadrivalent metal tin, which is associated with carbon. Most of the other metals, however, are incidentally noticed, and the formulæ of their principal compounds are given in tables. Each chapter is followed by a series of questions for testing the attainments of the students. Mr. Gill desires that the answers to these questions should be *written out* in full; and we agree with him in thinking that the framing of mere verbal or mental answers must lead to slovenly habits of thought. The numerous experiments by which the facts mentioned in this book are illustrated, are described so plainly and with so much attention to minute details, that we scarcely needed the author's assurance that they have been actually exhibited to classes of boys in the form given. The following directions for preparing *red* or *amorphous phosphorus* is a fair example of the author's minuteness of description:—



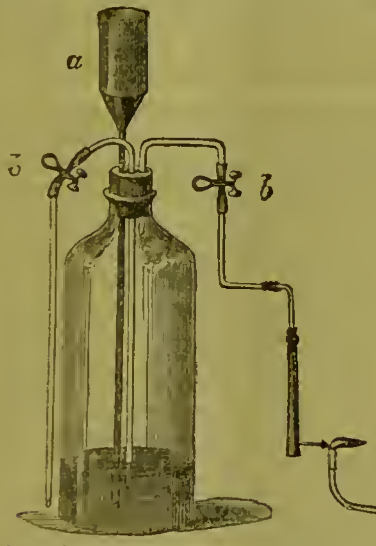
> "Place an ounce or so of ordinary phosphorus, which has been dried by filter paper, in a small flask furnished with a good cork, and a *long* tube bent as shown in the figure, and dipping into mercury. Stand the flask in a bath of linseed oil (a small saucepan forms the cheapest and best oil bath), and hang a thermometer (*t*) in the oil by its side. Allow the whole to stand till the phosphorus has absorbed the oxygen of the air in the flask; and then heat the oil slowly up to about 235° C., and maintain it at that temperature for thirty or forty hours, taking especial care that it never rises as far as 250° C. The phosphorus, which on the first application of heat becomes quite liquid, gradually turns red, and is reduced to a hard mass of a brick-red colour. Even after long heating there will be some unaltered phosphorus left, which must be dissolved out by bisulphide of carbon, or a boiling solution of caustic alkali."

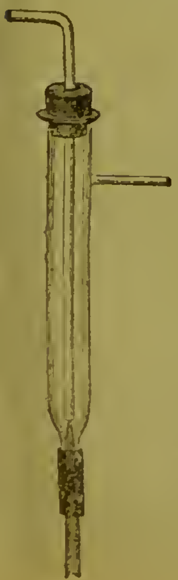
The production of spontaneously inflammable *phosphuretted hydrogen* constitutes a very pleasing experiment, and if the following directions be strictly attended to, the operator need fear no accident:—

"Put a gramme or two of phosphorus into a small non-tubulated retort and then fill this up, neck and all, with a solution of caustic soda, caustic potash, or milk of lime. Fit to the neck of the retort a delivery tube, and plunge this last below the surface of water in a good sized pan. Apply a gentle heat; in a short time bubbles of gas will form over the surface of the melted phosphorus, will rise and gradually expel the liquid from the neck of the retort, and at last escape from the end, rise through the water in the pan, and burst in the air. As each bubble bursts it spontaneously catches fire, and the hydric phosphate formed rises in the shape of a rolling and growing ring of white smoke. In cleaning out the retort, take the precaution to place the thumb over the mouth of the delivery tube before lifting it out of the basin, and then to plunge retort and all entirely below the surface of cold water, while the thumb still remains on the mouth of the delivery tube. Allow the contained gas to escape slowly, and then remove the phosphorus. The admission of air to the retort while gas still remains would result in an explosion."



Several new forms of apparatus are described and illustrated by Mr. Gill. The Bottle Gas-holder, formed from an ordinary "Winchester Quart," is an extremely useful contrivance. In the engraving which we print through the kindness of Mr. Walton, it is shown in use as a source of oxygen for the production of the lime light. A stream of the gas issuing from the nozzle of a common mouth blowpipe attached to the exit tube passes across a small flame of coal gas, proceeding from a plain round jet. The flame is bent aside and loses almost all its luminosity, but is so intensely hot that a bit of lime exposed to it emits a light of almost unendurable brilliancy. The construction and method of using the bottle gas-holder, which can be applied to many purposes, are minutely described in the section on the Preparation of Apparatus in the Appendix.





The aspirator recently introduced for drawing a current of air through an arrangement of tubes or bottles is another useful contrivance applicable to numerous manufacturing processes. We cannot resist quoting the author's description of this simple air pump:—

> "The construction and mode of action of the aspirator is this. The wide glass tube with the small right angle piece is six inches long, it is attached at its lower drawn-out extremity to a vertical tube of ¼ inch bore and as long as possible (40 feet is the *best*, but 4 feet will serve for the purpose of this experiment). The narrow tube which passes down the axis is drawn out to a point, and serves to convey a stream of water from a tap. As the water rushes down the long pipe it carries air with it, as big bubbles enclosed between small plugs of water. Therefore, any apparatus connected with the entrance tube will be deprived of a part of its air. If the tube is 40 feet long, a vacuum equal to that of a second-class air-pump is readily obtained. Quarter inch lead gas pipe is very suitable for the long tube, which can be passed through the wall of a room and down the outside of the house to a drain below."

Following the chapters devoted to the systematic course of practical and theoretical chemistry, there are several independent sections, treating respectively on the Crystalline Systems, the Metric System of Weights and Measures, General Operations and Manipulations, and the Preparation of Apparatus. At the end of the book there is also a useful List of Apparatus and Chemicals, with approximate cost.

The Chemists' and Druggists' Directory. Second Edition. London: Kelly and Co.

The early date at which the first edition of the above directory was exhausted seems a conclusive proof that the work was wanted. Before printing the second edition, Messrs. Kelly had the book thoroughly revised, and we notice many pages where improvements are manifest. As far as London is concerned, at any rate, the book is now very trustworthy, and we have no doubt the rest of the country has had equal attention.

A Manual of Qualitative Analysis. By ROBERT GALLOWAY, F.C.S., etc. Fifth edition. London: John Churchill and Sons.

This new edition of Professor Galloway's excellent *Manual of Qualitative Analysis* will be welcomed by teachers and students, and its extensive adoption as a laboratory guide may be confidently predicted. The general plan of the work remains unchanged, but the additions are numerous and important. We shall take an early opportunity of noticing the novel features of this edition, and of explaining the philosophical method of study advocated by the author. At present, we simply record our opinion that Professor Galloway's *Manual* is the best treatise on Qualitative Analysis within the reach of the English student. Those who possess the fourth edition will be glad to learn that the nomenclature and notation of the new edition are in harmony with modern theories.

A Pharmaceutical Guide to the First and Second Examinations. By JOHN BARKER SMITH. London: John Churchill and Sons.

According to the Preface, "the author's aim has been to supply in one book that information which has hitherto been procured only from several books, by systematic arrangement to aid the memory and save the time of the student, and, finally, to place in the hands of the pharmaceutical student a guide which, when supplemented on his part by thoughtful study, and extended by observation and practical experience, shall procure him complete success." We have looked through this medley of Latin Grammar, Fractions, Materia Medica, Botany, Chemistry, Pharmacy, and Posology, and have come to the conclusion that it is not one of those "little books" which the world will find "after many days." It seems to us to be a sloppy production, but until we have subjected it to a second examination, we hesitate to condemn it unreservedly.

LIST OF NEW BOOKS.

Ansell's The Royal Mint; its Working, Conduct, etc. 8vo., 7s. 6d.
Basham's Renal Diseases, their Diagnosis and Treatment. 7s. 6d.
Dobell's Progress of Practical and Scientific Medicine. 8vo., 18s.
Friedrich's Grammar of the German Language. 12mo., 4s. 6d. cloth.
Hill's Lunacy, its Past and its Present. 8vo., 3s. 6d., cloth.
Inman on the Restoration of Health. 8vo., 7s. 6d., cloth.
Lankester on Comparative Longevity in Man and Animals. 4s. 6d.
Marshall's Human Body, its Structure and Functions. 2 vols., 21s.
Montgomery's Wealth of Nature, Our Food Supply. Cr. 8vo., 5s.
Rogers on the Present State of Therapeutics. 8vo., 6s. 6d., cloth.
Smith's Pharmaceutical Guide to First and Second Examinations. 6s. 6d.
Williams's Fuel of the Sun. 8vo, 7s. 6d. cloth.
Wilson's Lectures on Ekzema and Ekzematous Affections. 10s 6d.
Wormell's Elementary Course of Plane Geometry. 12mo., 2s. 6d., cloth.

Corner for Students.

CONDUCTED BY RICHARD J. MOSS.

The chemical formulæ employed in this section are based upon the new system of atomic weights, unless the use of the older system is specially indicated. In the *British Pharmacopœia* the symbols corresponding to those adopted here are printed in heavy Clarendon type. The new editions of Fownes's *Manual of Chemistry*, and Attfield's *Chemistry: General, Medical, and Pharmaceutical*, supply the data required for calculations, and are recommended as text-books.

THE degree of proficiency to which many of our correspondents have attained, through the practice they have had in working out solutions to our problems, has of late given rise to the publication of more difficult questions, which doubtless have had a tendency to prevent less advanced students competing. In order, therefore, that the advantages offered by this department should be increased and extended, we intend to publish each month two separate sets of questions, and as usual to award two prizes, viz., one First Prize for the best answers to the questions of the First Division, and one Second Prize for the best answers to those of the Second Division.

No student can, in the same month, compete in both divisions, and *those who have already obtained prizes are excluded from the second division.*

QUESTIONS.

First Division.

I. Acidum Hydrocyanicum Dilutum, *B.P.*—A quantity of this acid was supersaturated with a solution of potassium hydrate, and then treated with an excess of a mixed solution of ferrous and ferric chlorides, and finally acidulated with hydrochloric acid; the result was a precipitate which weighed 22 grains. Required—the quantity in fluid drachms of the dilute acid employed.

II. Volumetric Solution of Nitrate of Silver, *B.P.*—Express in the form of symbolic equations, the reactions which take place when this solution is used for testing the three substances enumerated in connection with it in the Pharmacopœia. How may the silver nitrate be recovered from the products of these reactions?

III. Bismuthi Subnitras, *B.P.*—This substance forms with sulphuric acid, diluted with an equal bulk of water, a solution which is blackened by ferrous sulphate. Explain this reaction and express it symbolically.

IV. Qualitative Analysis.—In the analysis of a solution a precipitate is obtained from ammonium carbonate, which has to be examined for barium, strontium, and calcium. How may this be done?

V. Sulphuric Acid.—What are the principal properties of this acid and its salts? How may free sulphuric acid be detected in the presence of a sulphate?

Second Division.

I. Sodæ Arsenias, *B.P.*, and Ferri Arsenias, *B.P.*—What weight in grains of each of these substances should be employed in order to have quantities containing ·025 of a grain of arsenicum.

II. Zinci Chloridum, *B.P.*—What impurities should be detected, if present, by the officinal tests for the purity of this substance?

III. Acids.—How may dilute solutions of hydrochloric, sulphuric, and nitric acids, be distinguished from one another?

IV. Light.—What conditions are necessary for light to be produced in chemical combination? Do the light and heat emitted by burning bodies bear any proportion to each other?

V. Specific Gravity.—After the introduction of 35 grains of coal in small fragments into a specific gravity bottle holding 500 grains of water, the contents of the bottle are found to weigh 506 6 grains. What is the weight of a block of the coal containing 25 cubic feet? (1 cubic foot of water weighs 62·5 pounds.)

ANSWERS.

I. Extractum Ergotæ Liquidum, *B.P.*—Ether is employed in the preparation of this extract, for the purpose of removing a colourless fixed oil (very soluble in ether), which is one of the constituents of ergot, as its presence in the extract is considered objectionable. The ether is washed, because if the alcohol which it contains was not removed, it would dissolve some of the ergotin, this substance being soluble in alcohol.

It is questionable that the use of ether in the preparation of this extract is necessary, as the oil dissolved by it is insoluble in water.

II. Volumetric Solution of Oxalic Acid, *B.P.*—The sample contains 81·139 per cent. of potassium carbonate.

As 100 c.c. of the standard solution of oxalic acid contain 1-20 of the molecular weight of this acid in grammes, and accordingly neutralise 1-20 of the molecular weight of potassium carbonate in grammes $\left(\frac{138}{20} = 6{\cdot}9\right)$, the quantity of the latter salt neutralised by 127 c.c. of the solution is found by the proportion,

$$100 : 127 = 6{\cdot}9 : x \therefore x = 8{\cdot}763.$$

As 10·8 grammes of the sample contain 8·763 grammes of the anhydrous salt, the percentage is found thus:—

$$10{\cdot}8 : 100 = 8{\cdot}763 : x \therefore x = 81{\cdot}139.$$

The potassium carbonate may be recovered by simply igniting the oxalate, as by this operation this salt is decomposed, carbon monoxide being evolved, and the carbonate left unaltered.

III. Cupri Sulphas, *B.P.*—The ammonia test for the purity of this substance is ordered for the purpose of detecting iron, an impurity not unfrequently found in the cupric sulphate of commerce. The chlorine water is added to oxidise the iron salt that may be present; because ferrous sulphate gives no precipitate with ammonia in the presence of salts of ammonia, whereas ferric sulphate gives a precipitate of ferric hydrate with this re-agent, even in the presence of its salts. Ferric hydrate, if produced, is not dissolved by a further addition of ammonia; but a sufficient quantity of the alkali dissolves cupric hydrate (precipitated by the first addition of the ammonia) completely; forming a violet blue solution of ammonia cuprosulphate thus:—

$$CuSO_4 + 2NH_4HO = CuH_2O_2 + (NH_4)_2SO_4,$$
$$CuH_2O_2 + (NH_4)_2SO_4 + 2NH_4HO = Cu(NH_3)_4SO_4,H_2O + 3H_2O.$$

It is remarkable that the colour of blue vitriol is due to the presence of water. The anhydrous salt prepared by depriving the crystals of their water of crystallisation at a temperature of about 400° Fahr., is a yellowish white powder, which, if added to alcohol free from water, is unaltered in colour; but if water be present, it becomes blue, being converted into the hydrated salt.

IV. Acidum Hydrochloricum, *B.P.*—The officinal process for the preparation of this acid is simply the absorption by water of the gaseous hydrochloric acid produced by the action of dilute sulphuric acid on sodium chloride, thus:—

$$NaCl + H_2SO_4 = NaHSO_4 + HCl,$$

The quantities ordered are in the proportion of about one molecule of sodium chloride to one molecule of sulphuric acid; when employed in the proportion of two molecules of the former to one of the latter, the hydrochloric acid is far from being entirely evolved. The residue in this case is a mixture of acid sodium sulphate and undecomposed sodium chloride. But in the proportion of one molecule of each, the decomposition is complete and requires only a moderate temperature; moreover, the residue of acid sodium sulphate remains semifluid, even after cooling, and is therefore easily poured out.

The molecular weights of sodium chloride and sulphuric acid being 58·5 and 98 respectively, to find the quantity of acid required to decompose the 48 ounces of sodium chloride ordered, we have the proportion,

$$58{\cdot}5 : 48 = 98 : x \therefore x = 80{\cdot}410.$$

The quantity of sulphuric acid ordered is 44 fluid ounces, or $(44 \times 1{\cdot}843 =)$ 81·092 ounces by weight, of which 96·8 per cent. is real acid, or $\left(\frac{81{\cdot}092 \times 96{\cdot}8}{100} =\right)$ 78·497 ounces, which is less than is actually required, and is therefore the quantity from which we must calculate the theoretical product. As 36·5 ounces of hydrochloric acid ($HCl = 36{\cdot}5$) are produced for every 98 ounces of sulphuric acid decomposed, the quantity of acid employed should yield 29·236 ounces of hydrochloric acid, according to the proportion—

$$98 : 78{\cdot}497 = 36{\cdot}5 : x \therefore x = 29{\cdot}236.$$

The actual product of the officinal process is 76 56 ounces (66 oz. sp. gr. 1·16) of which 31·8 per cent. is hydrochloric acid, or $\left(\frac{76{\cdot}56 \times 31{\cdot}8}{100} =\right)$ 24·346 ounces, showing a loss of $(29{\cdot}236 - 24{\cdot}346 =)$ 4·890 ounces of real acid.

V. Acidum Nitricum and Acidum Nitricum Dilutum, *B.P.*—A mixture of one pound of potassium nitrate and one pound of sulphuric acid, when distilled, should produce a quantity of nitric acid equivalent to 10·017 fluid ounces of acidum nitricum *B.P.*, or 51·7545 fluid ounces of acidum nitricum dilutum *B.P.*

The reaction may be thus represented :—

$$KNO_3 + H_2SO_4 = HNO_3 + KHSO_4.$$

The molecular weights of potassium nitrate and sulphuric acid are 101 and 98 respectively. The officinal sulphuric acid contains 96·8 per cent. of real acid, so that 98 parts of real acid should be contained in 101·24 parts of the officinal acid, according to the proportion—

$$96{\cdot}8 : 98 = 100 : x \therefore x = 101{\cdot}24.$$

Consequently, in a mixture of one pound of each of these substances, there would be a slight excess of potassium nitrate, which would not be decomposed; and, therefore, the product must be calculated from the quantity of sulphuric acid employed, viz., 16 oz. The molecular weight of nitric acid being 63, we have the proportion—

$$101{\cdot}24 : 16 = 63 : x \therefore x = 9{\cdot}9565.$$

Now, one fluid ounce of the officinal acid weighs 1·42 ounce, and contains 70 per cent. of nitric acid, or ·944 ounce; therefore, the quantity of this liquid that contains 9·9565 ounces of acid is found by the proportion—

$${\cdot}994 : 9{\cdot}9565 = 1 : x \therefore x = 10{\cdot}017.$$

As 6 fluid ounces of the strong acid produce 31 fluid ounces of the dilute, 10·017 ounces of the former should produce $\left(\frac{10{\cdot}017 \times 31}{6} = \right)$ 51·7545 ounces of the latter.

VI. Qualitative Analysis.—The solution should first be examined for ammonia. This may be readily done by putting a small quantity of calcium hydrate in a beaker, and adding a quantity of the solution sufficient to make the lime into a thick paste. The beaker is then covered with a glass plate, on the lower surface of which adheres a piece of moistened turmeric paper. If ammonia is present, the yellow colour of the turmeric paper will be changed to brown. Ammonia, if present, must be expelled; for this purpose the remainder of the solution is evaporated to dryness, and the residue heated until the ammonia has been volatilised. It is then dissolved in water, and this solution, or the original solution if ammonia was absent, is examined for potassium and sodium as follows:—A clean platinum wire is dipped into the solution, and then introduced into the flame of a Bunsen's gas lamp; if the flame is coloured yellow, sodium is present; if it is coloured violet, sodium is absent and potassium present. If sodium is present, the flame should be examined through a deep blue cobalt glass, as the coloured rays peculiar to sodium are not transmitted through this coloured glass, whilst those of potassium are. As a confirmatory test for potassium, the solution is mixed with platinic chloride, evaporated to dryness on the water bath, and the residue treated with alcohol, which dissolves the excess of platinic chloride, forming a yellow solution. If potassium is present a yellow crystalline precipitate of potassium platinochloride remains undissolved.

VII. Carbon Dioxide.—The weight of the sodium carbonate decomposed is 14·614 grammes.

To find the actual pressure to which the gas was subject at the time of measurement, we must subtract the height of the column of mercury in the gas vessel (23 m.m.), from that of the barometer at the time of measurement, viz., 747 m.m. Then, by the following proportion, we find the volume of the gas at the standard pressure:—

$$760 : 747 - 23 = 1{\cdot}2 : x \therefore x = 1{\cdot}143.$$

As 1 litre of carbon dioxide weighs 1·967 gramme, 1·143 litres should weigh (1·967 × 1·143 =) 2·2483 grammes. Then, as the decomposition of one molecule of sodium carbonate (286) results in the production of one molecule of carbon dioxide (44), the weight of the former required for the production of 2·2483 grammes of the latter is found by the proportion—

$$44 : 2{\cdot}2483 = 286 : x \therefore x = 14{\cdot}614.$$

VIII. Chemical Terms.—The term anhydrous is applied to compounds which have been deprived of water without undergoing a change of chemical properties, in contra-distinction to the term anhydride, which is used to designate those compounds which, by the removal of the elements of water, have acquired essentially different chemical properties. The term hydrous is the converse of anhydrous, and is applied almost exclusively to crystallised bodies containing water, generally in a state of feeble combination. The geometrical form of the salt being dependent on this water, it is usually termed water of crystallisation. The term hydrate is applied to compounds derived from water by the substitution of an equivalent of a radical for one-half of its hydrogen.

IX. Chromic Acid.—This acid has not been obtained in the solid state; it is supposed to exist in solution. Chromic anhydride is a crystalline scarlet coloured solid, which deliquesces rapidly when exposed to the air; its solution possesses a deep reddish-brown tint, and is instantly reduced by contact with organic matter. There are normal, acid, and basic chromates. The normal salts of the alkalies, of calcium, strontium, magnesium, nickel, zinc, and copper, are soluble in water; the normal salts of the other metals are insoluble in water, but they are nearly all soluble in nitric acid; all the acid chromates are soluble in water. The yellow colour of the solution of a normal chromate changes to red on the addition of an acid, owing to the formation of an acid chromate. All the chromates are decomposed on being heated with undiluted sulphuric acid, or with hydrochloric acid; they are also decomposed by hydrogen monosulphide, the reaction being characterised by the change of colour of the solution from a red or yellow to green.

This acid may be detected in a solution by the following process:—A very dilute solution of hydrogen dioxide in a test tube, is covered with a layer of ether, and a portion of the solution under examination is added. If chromic acid is present, the solution of hydrogen dioxide acquires a fine blue colour; and by inverting the test tube repeatedly without much shaking, the solution becomes colourless, whilst the ether acquires a blue colour.

X. Combustion.—The use of the terms supporter, or non-supporter of combustion, in reference to the properties of an elementary or compound body, is objectionable, being applicable only under certain conditions liable to considerable variation. Hydrogen, for example, is said to be a non-supporter of combustion, because it extinguishes the flame of a taper which burns in air, while, on the contrary, it supports the combustion of a jet of oxygen.

PRIZES.

The First Prize for Solutions to the Problems printed in our February number has been awarded to

Alexander Fraser, 50, Lord-street, Liverpool,

to whom two similar prizes have already been awarded.

The Second Prize has been awarded to

J. Watts, jun. (J.W.), Attercliff, Sheffield,

who carried off the Second Prize in January.

Marks awarded for Answers.

	I.	II.	III.	IV.	V.	VI.	VII.	VIII.	IX.	X.	E.	Total.
A. Fraser (*1st prize*) ..	6	6	4	5	7	5	3	5	5	4	7	57
J. W. (*2nd prize*) ..	5	4	1	6	5	4	4	5	6	5	7	52
A. E. I.	4	5	7	2	0	5	4	5	4	5	6	47
J. S. E.	5	1	3	2	4	5	1	4	6	5	7	43
J. H. Watson	4	4	1	2	3	4	3	4	4	5	7	41
Ap Ifan	5	1	4	1	3	3	1	5	3	4	3	33
W. Maddocks	4	1	2	1	0	5	4	5	2	0	5	29

TO CORRESPONDENTS.

*** All questions forwarded to us for publication in this "Corner for Students" should be accompanied by the answers which the propounders believe to be correct. Communications should include the names and addresses of the writers; those which reach us after the first day of the month will be disregarded.

Prizes.—The students to whom prizes are awarded, are requested to write at once to the publisher, naming the book they select, and stating how they wish it forwarded.

A. Fraser.—III. The salt to which you attribute the blue colour is produced by heating the ammonia cupro-sulphate (see answer) to 149° C. VII. You did not employ the data given in the question.

J. W.—II. The incorrect result obtained detracts from the merit of the correct one. III. No effervescence attends the production of the blue colour, so it is evident that the equation representing the liberation of hydrogen and nitrogen is incorrect.

A. E. I.—V. You employed an incorrect formula for potassium nitrate.

J. S. E.—III. Formula intended for ammonia incorrect. Free sulphuric acid could not possibly exist in a solution containing an excess of ammonia. You should employ the atomic weights given in the Pharmacopœia.

J. H. Watson.—II. The method proposed for the recovery of the potassium carbonate is impracticable.

Ap Ifan.—The officinal potassium carbonate contains about 16 per cent. of water; according to the question, the percentage of anhydrous salt was required. We award extra marks for neatness of manuscript.

W. Maddocks.—II. You calculated the percentage of hydrated salt present. IX. There is a marked distinction between chromic acid and chromic anhydride. X. You should have assigned reasons for the opinion expressed.

Books offered as First Prizes.

Attfield's *Chemistry: General, Medical, and Pharmaceutical.* (Van Voorst.)
Brooke's *Elements of Natural Philosophy.* (Churchill.)
Conington's *Handbook of Chemical Analysis;* with Tables of Qualitative Analysis adapted to the same. (Longmans.)
Eliot and Storer's *Manual of Inorganic Chemistry.* (Van Voorst.)
Fownes's *Manual of Elementary Chemistry, Theoretical and Practical* (Churchill.)
Fresenius's *Qualitative Analysis.* (Churchill.)
Galloway's *Qualitative Analysis.* (Churchill.)
Ganot and Atkinson's *Elementary Treatise on Physics.* (Longmans.)
Garrod's *Materia Medica;* with Modern Chemical Notation. (Walton.)
Noad's *Chemical Analysis, Qualitative* and *Quantitative.* (Reeve.)
Northcote and Church's *Qualitative Analysis.* (Van Voorst.)
Odling's *Outlines of Chemistry.* (Longmans.)
Royle and Headland's *Materia Medica.* (Churchill.)
Williamson's *Chemistry for Students.* (Clarendon Press.)

[Any other scientific book that is published at a price not greatly exceeding half-a-guinea may be taken as a first prize.]

Books offered as Second Prizes.

Barff's *Introduction to cientific Chemistry* (Groombridge).
Bloxam's *Laboratory Teaching.* (Churchill.)
Church's *Guide for Students in Agricultural Chemistry.* (Van Voorst.)
Galloway's *First Step in Chemistry.* (Churchill.)
Gill's *Chemistry for Schools.* (Walton.)
Hofmann's *Introduction to Modern Chemistry.* (Walton.)
Huxley's *Lessons in Elementary Physiology.* (Macmillan.)
Oliver's *Lessons in Elementary Botany.* (Macmillan.)
Orme's *Introduction to the Science of Heat.* (Groombridge.)
Potts's *Elements of Euclid.* School Edition. (Longmans.)
Roscoe's *Lessons in Elementary Chemistry.* (Macmillan.)
Wormell's *Elementary Course of Mechanics.* (Groombridge.)
Wurtz's *History of Chemical Theory.* Translated by Watts. (Macmillan.)

[Any other scientific book which is sold for about five shillings may be taken as a second prize.]

THE MONTH

CHEMICAL SOCIETY.

At a meeting held on the 17th instant with Professor Williamson, F.R.S., President, in the chair, the following gentlemen were elected Fellows:—R. T. Atcherley, T. W. Axe, A. H. Bateman, E. Francis, A. Prangley, W. Pritchard, L. B. Ross, T. G. Rylands, T. Wills, and P. Wright. An account was given by Prof. Tyndall of his researches on "The Action of Light on Gases and Vapours," illustrated by a series of beautiful experiments.

Dr. Tyndall began by remarking that it had, for the last ten years, been his endeavour to make radiant heat a means of getting an insight into the working of the atomic forces, or, in other words, into the state which is called chemical combination. Whilst pursuing his experiments with luminous waves on matter in a finely divided state, he was forced to imagine molecules and atoms; in fact, his belief in the existence of atoms is founded more upon those physical evidences than upon the considerations which are current in the chemical world. If he had to give up the notion of atoms, and to replace that conception by the abstract idea of multiple proportions, he would feel completely at a loss how to account for changes in the physical properties of matter. After these introductory remarks, the lecturer proceeded to the main subject. The apparatus which served to illustrate the statements, consisted of a glass tube about 3 feet in length, and 3 inches internal diameter, closed at each end by glass discs. This tube, after having been exhausted by an air pump, was partially filled with dry air, which had been permitted to bubble through the liquid whose vapours were to be examined. The condensed beam of an electric lamp was caused to pass through the tube from end to end. Since the aim of these experiments is to render visible the chemical action of light upon vapours, substances have been chosen, one at least of whose products of decomposition by light has so high a boiling point that as soon as it is formed it is precipitated. Nitrous oxide gas, the vapours of amylic iodide, amylic nitrite, benzole, etc., mixed with some air which had passed through hydric nitrate or hydric chloride, were found well suited for this purpose. In all cases, no matter what the nature of the vapours was, if it was only employed in a sufficiently attenuated state, the visible action commenced with the formation of a blue cloud, which in some instances was of the deepest azure tinge, rivalling the colour of the purest Italian sky. When a cell containing some of the liquid whose vapours are to be examined was inserted between the lamp and the tube, no clouds were formed within the tube; the luminous waves traversing the liquid had been deprived of their acting power. When polarized light was sent through the tube the blue cloud was visible only in one direction—the direction varying according to the position of the Nicol's prison; when the short diagonal of the Nicol was vertical, the blue cloud was seen when the spectator's eye looked horizontally upon the tube, not otherwise; as soon as the prism was turned round its axis, the blue cloud was only seen when the line of vision fell vertically upon the experimental tube.

After concluding his account of this highly interesting subject, Prof. Tyndall showed some of the experiments bearing on his researches upon Dust, quite recently communicated at the Royal Institution.

LONDON CHEMISTS' ASSOCIATION.

On Thursday, February 10th, a paper on "Gun-cotton" was read by Mr. Sands. Having sketched the history of this product, he described the present mode of obtaining it, and in doing so he gave a most interesting account of his visit to a manufactory where large quantities were prepared. After detailing the uses of Gun-cotton *proper*, he treated the subject from a pharmaceutic point of view. Gun-cotton, he said, was called pyroxylin by chemists, but there were three kinds of pyroxylin, each being looked upon as a substitution product derived from cellulose. Gun-cotton was the one in which three equivalents of H in cellulose were replaced by three equivalents of NO_2; the intermediate product, in which only two equivalents of H were replaced, was the pyroxylin ordered for the making of collodion.

A discussion ensued upon the solubilities of the different kinds of pyroxylin in different liquids, the B.P. pyroxylin, it was remarked, being insoluble in *pure* ether and in alcohol, but soluble if to *pure* ether 8 per cent. of alcohol be added, thus making it the ether of the Pharmacopœia, sp. gr. 0·735, and if to this more pure ether was added, it still remained dissolved; 10 per cent. of pure ether rendered it soluble in alcohol likewise. Some discussion also took place upon Dr. Richardson's Styptic Colloid, and the behaviour of Tannate of Ethel.

On Thursday, February 17th, Mr. Walker read a paper on "Applied Electricity." He first noticed more particularly the application of electricity to telegraphy, explaining fully the mechanical arrangements of the electric telegraph, and the different reading and printing instruments in use; he then showed to what purposes electricity may be applied in ordinary business pursuits. An interesting discussion ensued, Mr. Porter mentioning some of the uses to which electricity is at present put.

The following question was discussed: When spirit of cinnamon is ordered in a prescription, what should be used? It was thought that pharmacists had no option, and of course ought to use spirit of cinnamon of the London Pharmacopœia; it was considered an omission from the British Pharmacopœia; physicians frequently prescribed it, thinking, no doubt, there was a form for it in the B.P., and of the same strength as the other spirits. It was thought, also, that there should be a standing Pharmacopœia Committee, so that such might from time to time, between the appearance of new editions of the Pharmacopœia, publish authorized formulæ for the preparation of any new medicines that might come into use.

On Thursday, February 24th, a paper was read on "Geographical Botany," by Mr. Beynon. In commencing he pointed out the connection between botany and geography, plants influencing the contour of land in a remarkable degree. He then proceeded to state the different effects of climate, *i.e.*, of heat, moisture, light, winds, etc., on vegetation. He thought that the east winds of March in our own land not only dried the ground for seed-planting, but by keeping the shrubs and trees almost constantly in motion just then, caused heat, and so promoted the flow of the sap. The globe, he remarked, was divided arbitrarily into so many zones or belts, but they did not represent invariably ranges of climate, or of vegetation, though they were as a rule characterized by certain clsses of plants. The differences that were observed in vegetation in travelling from the equator to the poles, were observed also in ascending mountains, but in a more marked degree. Mr. Beynon read extracts very descriptive of mountain vegetation from the works of several travellers; he next gave the height of the corn line in different latitudes. Trees, he said, grew at a greater height in relation to the corn line in temperate climes than in hot. The cultivation of plants, more especially of medicinal plants, was next considered. He noticed some that are now being cultivated with success; some whose habitats were lost or destroyed; some which, disappearing from one part, had been found elsewhere; and others which were getting scarce, but which, perhaps, were not worth cultivating. Mr. Beynon reminded those present that pharmacists at one time had gardens attached to their laboratories for the growing of such herbs as they used, and that they seemed certainly much better acquainted with the properties of their native plants than we are.

In the discussion which followed, Mr. Martindale spoke of differences that occurred in the secretions of plants. Some English plants, for instance, secreted poisonous principles in some places, but not in others. He spoke, also, of plants becoming extinct, and gave Darwin's theory for such extinction taking place—namely, from the stronger plant apparently pushing out the weaker. Mr. Weaver and Mr. Porter argued in favour of a *natural* rotation of plants.

On Thursday, March 3rd, Mr. Porter gave his first lecture on "Agricultural Chemistry." He began by stating how necessary it was before studying agricultural chemistry to possess a knowledge of vegetable physiology, and to know in what manner plants absorbed their nourishment. Mr. Porter then briefly described the functions of the root, with its spongioles, the stem, the leaf; the use of the stomates in elaborating the sap, and their action under various atmospheric changes; the seed, its formation, structure, and germination. He then proceeded to speak of the different kinds of soils, and how they appear to have been produced. He classified them as follows: sandy, containing large quantities of silica; chalky, containing lime; clayey, containing alumina; mouldy, containing large quantities of organic matter; marly soils, containing lime under 20 per cent.; and loamy soils, containing lime over 20 and under 50 per cent. Mr. Porter then gave the chief physical properties of these soils, whether they were easy to cultivate or not; he also noticed the products obtained from them, and the wild plants that characterized them. After giving the average results of analyses he had made of the different soils, he concluded by saying that the subject was too comprehensive for a single paper, and that he would enter further upon the subject on some future evening.

SHEFFIELD PHARMACEUTICAL AND CHEMICAL ASSOCIATION.

The general monthly meeting of this Association was held in the Rooms Music Hall, on Wednesday evening, February 9th, Mr. E. Wilson, the President, in the chair.

Mr. W. Baker, F.C.S., lecturer upon Toxocology, at the Sheffield School of Medicine, delivered a very interesting lecture upon "The Detection of Poisons," of which the following is a short abstract:—

"The detection of poisons is only a branch of analytical chemistry; the substances to be discovered are grouped in a different manner than is usually adopted in ordinary analysis. With a short review of the poisons and their classification, a method of search is proposed which may be advantageously pursued by the operator.

Poisons are divided into irritant poisons and neurotic; amongst the former we have the mineral acids, oxalic acid, alkalies and their salts, phosphorus, arsenic, antimony, lead, copper, zinc, and other metals, besides vegetable and animal irritants. The neurotic poisons are divided into three classes, according to their physiological action—narcotic, spinal, and cerebro-spinal. As types of these we may take opium, nux vomica, and belladonna.

In case of matters containing poison being examined, the first thing to be observed is the odour, and then to distil a portion for the volatile poisons. Alcohol may be detected by its well-known physical properties, and by boiling with a little hydrochloric acid, and a few drops of potassium bichromatic, the solution changes to a green colour from the formation of chromic oxide, and the characteristic smell of aldehyde is perceived. Hydrocyanic acid if suspected to be present, must be collected in an ice-cold receiver containing a little water. Argentic nitrate produces a white curdy precipitate insoluble in dilute nitric acid. This test may be made very delicate by inverting over a watch glass containing the fluid, a second one having a single drop of the silver nitrate on the inner surface. A white film will soon form from the vapours of hydrocyanic acid present. Another elegant test is to form sulphocyanate of ammonium by presenting a drop of yellow sulphite of ammonium to the action of the vapour; the reaction of this salt with persalts of iron producing a crimson red colour, is well-known, and is distinguished from the red colour produced by meconic acid and persalts of iron, by its ready removal upon the addition of mercuric chloride, which has no action upon the colour of the meconate. In a small portion of the liquid or substance to be examined, search may be made for oxalic acid, and the mineral acids and salts. Powdered substances may often be readily detected by projecting a portion into a tall vessel filled with water. Any white particles may be picked out and examined for arsenic, lead, &c. Others of red, yellow or green colour may be arsenic, copper, antimony, &c. A third portion should next be acidified with hydrochloric acid, and one third of it taken for the detection of the alkaloids. A description of the methods employed was given and the special tests for strychnia, brucia, morphia, and meconic acid shown. The microscope is invaluable for the certain identification of crystallize precipitates, as shown in Wormley's "Micro-Chemistry of Poisons," which was highly recommended. In the next portion the metallic poisons, arsenic, antimony, and mercury, are to be sought. All precipitate in the metallic state form an acidified solution upon immersion of a piece of clean copper foil; the characters of the sublimates from these deposits was described, as well as the method of apply, Marsh's test for arsenic, lead, copper and zinc are, to be detected in the last portion."

The lecture was listened to with very great interest, and at its conclusion Mr. E. Wilson, President, proposed, and Mr. Ward seconded, a vote of thanks to Mr. Baker, which was most cordially carried.

The minutes of the last meeting having been read and confirmed, other business was transacted, and the Meeting closed.

MANCHESTER CHEMISTS' AND DRUGGISTS' ASSOCIATION.

The fifth monthly meeting of the session was held in the Memorial Hall on Friday evening, March 4. Refreshments having been served, Mr. Brown, Vice-President, took the chair. Messrs. Whitelegge, Methurn, Sanderson and T. H. Evans, were elected members, and Mr. Miles Atkinson an associate.

The sub-committee appointed at the previous meeting presented to the meeting the following resolution which had been unanimously adopted by the council at a meeting held February 21:—

"That in the opinion of this council, legislation as to the keeping and dispensing of poisons is unnecessary and undesirable, a well digested plan if issued by the council of the Pharmaceutical Society as a recommendation, would be generally accepted and meet all present requirements."

Copies of the resolution had been forwarded to most of the Chemists' Associations in the north of England, and from these the unanimous opinion received had been in favour of its adoption.

It was resolved that the above resolution be forwarded to the Pharmaceutical Council with a letter enumerating the reasons for its adoption, the chief of which were the following:—

That accidents arising from mistakes in dispensing are not sufficiently numerous to call for legislative inteference.

That Legislation would be inoperative unless accompanied by systematic inspection, which was objectionable.

That medical men, in whose hands the greater part of the dispensing remains would be unaffected by the proposed regulations.

That if the penalty now attaching to want of due care, involving as it does not only pecuniary responsibility for damage, but ruinous loss of reputation and confidence does not induce sufficient care, no legislative restriction would avail with the negligent, whilst the trade at large would be hampered and annoyed by unnecessary regulations accompanied by hateful inspection."

Mr. Robinson then read a paper "On late hours of business and the effect of such on the progress of Pharmacy."* An animated discussion followed, and a general willingness to shorten business hours as much as possible was expressed.

The last meeting of the session, will be held on Friday evening, April 1st.

ASHTON-UNDER-LYNE AND DUKINFIELD CHEMISTS' ASSOCIATION.

THE chemists of Ashton-under-Lyne and Dukinfield have manifested considerable interest in the proposed "Regulations for the Keeping and Dispensing of Poisions," issued by the Council of the Pharmaceutical Society. At their usual monthly meeting in February, the question was introduced, and warmly commented upon, and a resolution adopted, adjourning,the discussion to a special meeting of the association convened for the evening of March 3rd. In the interim, copies of the *Pharmaceutical Journal* for January and February, containing the proposed "regulations," and correspondence thereon, were handed round by the Secretary to every member of the trade. The expression of opinion at the special meeting was decidedly adverse, not only to the particular scheme of the Council then under discussion, but to all further legislative interference with the trade, the interests of which, it was insisted upon, would be best secured by educational means, developing an intelligent self-reliance, and sense of responsibility.

The following resolutions, moved by Mr. Jabez Waterhouse, and seconded by Mr. J. Howard, were cordially adopted:—

"That in view of legislative interference in the management of our business, as now proposed by the Council of the Pharmaceutical Society, we, the Chemists of Ashton-under-Lyne and Dukinfield, after a full discussion, unanimously resolve—

"1st. That regarding ourselves as fully competent to arrange the details of our own respective businesses, with due regard to the safety and advantage of the public, we consider the exercise of any further legislative authority unnecessary.

"2nd. That whilst we deprecate the enforcement of regulations in the management of our business, we shall always respectfully consider any recommendations which the Council of the Pharmaceutical Society may suggest.

"3rd. That recognising the value of some of the 'proposed regulations for the keeping and dispensing of Poisons,' this association nevertheless regards any artificial or mechanical system whatever as of secondary importance, and would urge its members mainly to rely upon the habit of a careful and intelligent discrimination in the keeping, sale, and dispensing of Poisons."

THE SCARBOROUGH CHEMISTS' ASSOCIATION.

DURING the past winter a meeting of the Scarborough chemists was convened to consider the half holiday question at that time prominent in the town. They then agreed to close their shops every Friday afternoon, until a date agreed on, from 2 to 6 p.m.; and although nearly all other trades have fallen through, the chemists have manfully kept their word with remarkable equanimity and good feeling.

Their first meeting having been so successful the desirability of uniting together in an association was suggested, and this union has now been effected.

It was thought that a social gathering would be the most appropriate inauguration; and a general response being given, about twenty members of the trade on Friday, the 25th ult., sat down at the station hotel to a sumptuous dinner provided by Mr. Wells, a respected member of the fraternity, whose efforts to cater for the enjoyment of his friends were of a most successful character.

The usual loyal and local toasts were proposed, and a most cordial feeling prevailed.

Those present unanimously admitted the necessity of union for promoting mutual interests, and for preparing the younger branches as opportunity presented by classes or otherwise, to pass the now necessary examinations; and it being understood that an association with such objects should be formed, the following were elected officers for the ensuing year:—President, Mr. Alderman Porrett; Vice-President, Mr. Robson; Secretary and Treasury, Mr. Whitfield. It was also understood that arrangements should be made for monthly meeting, out of the season.

LEICESTER CHEMISTS' ASSISTANTS AND APPRENTICES' ASSOCIATION.

THIS Association has made good progress during the past half-year as will be seen by the following report presented by the Committee at a recent meeting:—

The number of Meetings held during the past six months have been forty-five, at which 451 members were present, showing a mean of ten members per night. Of the sixteen Assistants and fifteen Apprentices who have joined the Association this Session, the sixteen Assistants have attended in the aggregate 300 times, against 179 attendances for the Apprentices, being an average of nineteen attendances for each Assistants, and twelve for every Apprentice. The Committee tender their warmest thanks to those honorary and private members who have so kindly favoured the Association with lectures and papers during the Session; also to the respective teachers of the chemistry, botany, materia-medica, latin and arithmetic classes, for their disinterested services. The Committee have pleasure in referring to the small but otherwise satisfactory balance in the hands of the Treasurer. The judicious purchase of a few pharmaceutical and other scientific books, the Committee have reason to know, have given great satisfaction to the members of the Association, and they take the opportunity of reminding them that any donation to the library will be gratefully acknowledged by the Committee. They also note with pleasure the success of the additional means adopted by them to encourage systematic study among the junior members of the Association and hope that the efforts they have made for the acquirement of scientific knowledge, will be rewarded with a further improvement and increasing attendance by both Assistants and Apprentices in the forthcoming session of 1870.

The following gentlemen have been elected as officers for the ensuing half-year:—Messrs. J. Young, *President*; W. E. Hill, *Vice-President*; W. B. Clark, *Honorary Secretary*; E. H. Cadoux, *Assistant Secretary*; E. H. Butler, *Treasurer*; W. B. Blunt, Hy. Cooper.

QUEKETT MICROSCOPICAL CLUB.

THE Conversazione of this Society was held last Friday night (March 11) at University College. A large number of visitors attended, the Library being the principal attraction. Photographs were lent by the India Office. The Autotype Company, Mr. Arthur E. Durham, Mr. Frank Good, and Mr. A. L. Henderson. The Flaxman Drawings, by permission of the Council, were exhibited in the Shield Room. Mr. Solomon explained the whole process of Micro-photography by means of his Magnesium Lamp. Mr. How showed the Kaleidoscope, Polariscope, and Dr. Maddox's Micro-photographs, by Oxyhydrogen Light. Among the chief objects of interest were specimens of New Foraminifera collected during the late Dredging Expedition of H.M.S. *Porcupine*. These were lent by Dr. Carpenter, and were exhibited by Henry Crouch.

The series included Polycrystina, 750 fathoms; Nodosaria, 1,360 fathoms; Lingulina, 1,366 fathoms; Cristellariæ and Nodosaria, 1,360 fathoms: also a specimen with Siliceous Sponge, 1,380 fathoms.

An admirable description of the *two* dredging expeditions lately undertaken was given by Dr. Carpenter at the Royal Institution. Mr. Apps, well known in connection with electrical experiment, contributed the following:—

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* We print this paper at length in another part of our present issue.

Induction Coil, with the latest improvements, giving sparks as long as the bobbin itself, and great quantity effects.

A ten-inch Coil, entirely cased in polished ebonite, a most beautiful and durable instrument.

A three-inch Coil, of small size.

Set of 4 Vacuum Tubes, mounted in a new style so as to be conveniently shown, and securely arranged so as to avoid breakage, also affording great economy of space.

A new pattern of Gassiott Cascade, permanently exhausted bs the Mercurial Air-Pump. Resistance, ·02 inches of air, Barometer at 30·2 inches.

A magnificent Vacuum Coronet on head dress.

There was also a nice arrangement of skeleton flowers.

We specially commend this Society to our London students. It is one where the use of the microscope may be learnt, for while it by no means excludes the higher branches of research it does not disdain to teach the science which it represents. It effects socially that which Lionel Beale and others have already done so well in books.

BANKRUPTCY.

IN RE G. J. FIRMIN—THE ATLAS CHEMICAL WORKS.

An examination and discharge sitting was held in this matter on Thursday before Mr. Registrar Hazlitt. The bankrupt, George Jorden Firmin, was a manufacturing chemist, of 9, Old Montague-street, Whitechapel, trading as G. J. Firmin and Co. The adjudication was made in July, 1869, upon the petition of Mr. J. M. Seager, of 9, Mincing-lane, merchant. The accounts return debts to the amount of £13,275 9s. 4d., against property, held as security, £5,835 2s. 6d., good debts, £44 7s. 3d.: deficiency, £7,395 19s. 7d. The bankrupt states that he has mortgaged the Atlas Chemical Works, 9, Old Montague-street, which cost £8,266, as security for £3,000, being the estimated amount that the property would realize. Mr. Van Sandau, for the assignees, said it was agreed that the bankrupt should take his order of discharge upon the following conditions:—that he would pay £50 forthwith and £50 on the 10th of April next, and also pay £75 per annum until he should have paid his creditors 2s. 6d. in the pound. The bankrupt was willing to agree to these conditions. Mr. Registrar Hazlitt said the proposal was very honourable to the bankrupt. The order of discharge was accordingly granted upon the terms mentioned.

LAW AND POLICE.

THE PETROLEUM ACT—REG. *v.* HARMER.

This case, which came before the Middlesex Sessions on the 19th ult., was an appeal from a conviction on the 8th of November last by Mr. Paget, one of the magistrates at the Thames Police-Court, of the appellant, Mr. J. Harmer, of 9, King's-place, Commercial-road East, under the Petroleum Act, 1868, for keeping petroleum capable of throwing off inflammable vapour at a temperature of less than 100 degrees Fahrenheit, contrary to the provisions of the statute. Mr. Poland and Mr. Biron, instructed by the solicitor to the Metropolitan Board of Works, supported the conviction; and Mr. Grantham (instructed by Messrs. Thomas and Hollams) appeared for the appellant. The case excited considerable interest among the persons engaged in the mineral oil trade (on whose behalf generally it was stated that this appeal was being contested), and was supposed likely to decide various questions respecting the testing apparatus for petroleum issued and used under the direction of the Board of Works, and which has been objected to as not being in strict accordance with the directions given in the schedules to the Petroleum Act, 1868. It will be seen, however, that the case went off on another point, and, consequently, the objections to the apparatus were not gone into. The objection which thus proved fatal was as follows:—The proceedings had been taken and the conviction obtained under the 4th section of the Act, and the oil obtained from the appellant's shop had been tested by a gentlemen named Airey, an inspector of gas meters. The prosecution contended that under this section it was not necessary to have the oil tested by the inspectors of weights and measures, and that Mr. Airey, a gentleman of considerable scientific attainments, was better qualified to conduct the testing experiment than the inspector of weights and measures. While admitting the latter statement to be correct, Mr. Grantham maintained that section 6, which directed the testing to be by the inspectors, was applicable to all the sections of the Act, and that by the very words of this section it was only after such testing that a conviction can be obtained under the Act. After hearing Mr. Poland in reply, the Bench retired to consider their decision, and on their return,

Sir W. Bodkin said they were unanimously of opinion that the directions in section 6, were applicable to all the other sections; that whether the inspectors of weights and measures were persons on whom the duty of testing the oil should have been cast was for the Legislature, and not for this Court; and that, the testing not having been conducted by the persons appointed by the Act, the conviction must be quashed. The Court, however, would make no orders as to costs, and would grant a case, so that the matter could be taken before a higher tribunal.

Professor Miller, Dr. Letheby, and several other scientific gentlemen were in court, and would have been called as witnesses if the question about the testing had been gone into. Dr. A. S. Taylor had a seat on the bench, having attended as Assessor to the Court at the request of the learned Judge, and with the consent of the parties.

DISPUTED ACCOUNT—HOCKIN *v.* LOWE.

This case, tried in the Court of Queen's Bench on the 16th ult., was an action to recover the sum £20 15s. 6d., being the balance of an account for goods sold to the defendant.

It appeared that the plaintiff was a Manchester warehouseman, having offices in London. The defendant was a manufacturer of medical plasters, and was in the habit of purchasing quantities of a particular kind of cloth, and he agreed to purchase some cloth of the plaintiff, and it was stated that the only question would be whether the price was to be 2½d. a piece or 2⅝d. The manager of the plaintiff swore that the price agreed upon between himself and the defendant was 2⅝d.

The defendant did not appear, and the Judge said that in the absence of any evidence on the part of the defendant it was an undefended case.

Verdict for the plaintiff for the amount claimed.

THE PHARMACY ACT.—REG. *v.* BERRY.

This case which was tried at the Court of Queen's Bench, on the 14th ult., arose under the Pharmacy Act, 1868, and involved a question of great importance to chemists with regard to the sale of poisons. One Johnson had attempted to commit suicide. He was found to have obtained a mixture of prussic acid and rose water from a chemist at Worthing by producing what purported to be a prescription for a Mrs. Newton, for a lotion. He was unknown to the chemist. The chemist copied the prescription in his prescription-book, but did not label the bottle with the word "Poison." Being summoned before justices for selling poison to a person unknown to him, and without the labels required by the Pharmacy Act, he maintained that the lotion was a "medicine," dispensed by him and within the proviso in section 17 of the Pharmacy Act, 1868. The justices convicted him; but granted a case for the opinion of this Court.

Mr. Quain, Q.C. (Mr. Bullock with him), argued for the appellant; Mr. Lumley Smith supported the decision of the Justices.

The Court gave judgment for the appellant, being of opinion that "medicine," in the Pharmacy Act, included applications for external use, and that if the appellant *bonâ fide* believed that the lotion was ordered for Mrs. Newton as a medicine, he came within the proviso in the Act, and that it was sufficient for him to enter the name of Mrs. Newton, with a copy of the prescription, in his prescription-book.

Judgment for the appellant without costs.

CHARGE UNDER THE PETROLEUM ACTS.

On the 10th inst., Mr. Edward Percival Guest, chemist, of Brentwood, was summoned for that, being duly licensed under the provisions of the Petroleum Acts, 1862 and 1868, he did "unlawfully sell, by artificial light, to one James

Roast, two pints of benzoline, contrary to his licence and its provisions."—Mr. Preston appeared on behalf of the defendant.—Roast stated that he went to Mr. Guest's shop between seven and eight on the night of the 14th Feb. and asked for a quart of oil. The assistant supplied him with a quart, but he did not know what kind of oil it was; he took it home and burnt a portion of it in a spirit lamp.—Superintendent Bridges said there was no further evidence.—Mr. Preston: Then there is no case, and I'll put out my lamp (a lamp had been lit for illustration).—Mr. Bridges asked a man named Ward if he had any evidence to offer.—Ward: I only have to say what I said before the magistrates the other day; I only want justice.—Mr. Preston: Oh, Mr. Ward, the rival seller of this oil, is the informer, is he? Come into the box, sir, and we'll have a little justice.—Dr. English: The case is dismissed.—Mr. Preston said Mr. Ward had turned informer because the defendant had reduced the price of the oil.

BREACH OF CONTRACT.

An action was brought at the Nottinghamshire Spring Assizes, on the 8th inst., by an apprentice against his master, in consequence of breach of contract. John Bentley sued Mr. Greaves, druggist, Ironville, for damages, he having been put to work which formed no portion of the contract into which he had entered as an apprentice. Mr. Waddy apppeared for plaintiff, and Mr. Overend for defendant. Mr. Waddy stated that defendant united the position of druggist, with the profession of druggist, and that plaintiff had to run over the country delivering letters instead of learning his business. He also explained that plaintiff had good opportunities of learning to be a stoker at the engine used for grinding drugs at defendant's establishment as to be a druggist. Plaintiff not appearing when called, and the court after waiting some time for his appearance, and that of his solicitor, the plaintiff was nonsuited because he did not appear.

BREACH OF PROMISE OF MARRIAGE.

Miss Mary Jennings, of Kingsdown, Stratton St. Margaret, near Swindon, has obtained £100 damages in an action for breach of promise of marriage against Mr. H. R. Baker, chemist, of Southsea, Portsmouth, formerly of Swindon. Mr. Baker, in 1867, was assistant in the shop of Mr. Ing, chemist, Swindon, and made the acquaintance of Miss Jennings, who came to the shop to purchase some articles. He became her accepted lover, and offered marriage. Subsequently he suddenly left Swindon for Southsea, without giving the least intimation to Miss Jennings, and broke off all correspondence with her for several months. He then wrote again, but again ceased to correspond. The lady's uncle then wrote to him, when he replied after some days that he had been studying the changes of the moon, or would have answered sooner. A letter from Messrs. Kinneir and Tombs, the lady's solicitors, again called forth correspondence, but of a formal character, and it finally ceased. Mr. Baker than married a Miss King, of Cowes, Isle of Wight, and an action was brought by Miss Jennings to recover damages. Evidence was given to show that defendant was in a good position in business for himself, and a mass of correspondence was produced. A verdict for £100 was returned.

ACCIDENTS.

FIRE AT SHEFFIELD.

On the 15th ult., a fire occurred on the premises of Mr. Dobb, wholesale and manufacturing chemist, Westbar, Sheffield. It was confined to a wooden shed, used for storing empty barrels, and was subdued without much damage being done.

FATAL ACCIDENT AT BIRMINGHAM.

A fatal accident occurred on the 4th inst. at the Chemical Works of Messrs. Sturge, Wheeley's-lane, Birmingham, to a man named Mills. It appeared that deceased was engaged on a "night turn" at the works, and on the man whose duty it was to relieve him going there between four and five o'clock on Saturday morning, he could not obtain admittance as usual. Having obtained a key from the foreman who resides in the neighbourhood he entered the works and found the body of deceased in one of the pans of citric acid. There was a large quantity of liquor in the pan, which was scalding hot, and the body of Mills was floating on the top of the liquid. He was taken to the Queen's Hospital, but medical aid was of no avail. An inquest was held on the body of the deceased, and Dr. Jolly, house-surgeon to the Queen's Hospital, gave it his opinion that death resulted from a fracture of the skull. On visiting the scene of the accident it was evident that deceased had been oiling some shafting that ran over the pan, there being a landing or platform for that purpose, and having overbalanced himself fell head foremost, his head striking the side of the pan, causing the fracture of the skull (a quantity of hair and blood being on the sides). Descending into the citric acid he was suffocated before he could make an effort to release himself.

GOSSIP.

"Paterfamilias" pleads for Mrs. Winslow, of "soothing syrup" fame, in the following letter addressed to the editor of the *Canadian Pharmaceutical Journal*:—"Sir,—Noticing in the *Journal* of last month some strictures on the compound prepared by the ancient nurse, Mrs. Winslow, permit me to say that, about ten days since, my little girl, aged four years, found a bottle from which a teaspoonful had been taken, and swallowed the whole at one draught. When discovered, she was washing out the bottle for any remains of sweetness and flavour. She complained toward evening of sickness at the stomach, but was otherwise unaffected. Had the bottle contained two grains of morphia, as stated by the California *Medical Gazette*, the results would have been serious. Upon another occasion, half a bottle was taken by an older child without any inconvenience whatever. I have tried to introduce the use of simple carminative mixtures at home, but without success; and I have heard ladies declare that they would not attempt to bring up a large family without the aid of 'Mrs. Winslow,' if the price were one hundred dollars per bottle. The instances here given certainly justify a certain amount of confidence in its harmless character."

Nature records the death, on the 13th of January, of F. T. Otto, Professor at the Polytechnic School of Brunswick, known chiefly as the translator of Graham's "Elements of Chemistry." Two editions of this translation having been rapidly sold, a third edition was commenced in 1852, in which the plan of the original was entirely changed. Otto treated mineral chemistry in three volumes; theoretical chemistry being reserved to Buff, Kopp, and Zamminer, and organic chemistry to Kolbe and Fehling. Otto's chemical researches were not considerable. His books, however, on the manufacture of vinegar and on agricultural industry are held in great esteem. Otto was born in Saxony in 1809.

The same journal remarks that in the report of the Royal Commission on Pollution of Rivers, the presence of arsenic in the water and mud of rivers near alkali works is pointed out, and it is also stated that the London sewage at Barking contains as much as ·004 of arsenic in 100,000 parts.

At the last meeting of the Linnean Society (according to the report given in *Nature*), Mr. J. E. Howard read a paper by Mr. Broughton, chemist to the cinchona plantations in the Madras Presidency, on "Hybridisation among Cinchonas." He believes that the sub-varieties of *Cinchona officinalis* are permanent, but that hybrids can be artificially obtained, although they do not occur in Nature. The cinchona has long been known to belong to the class of dimorphic plants. In the discussion which followed, Dr. Anderson, superintendent of the Botanic Gardens at Calcutta, gave some interesting particulars of the cultivation of cinchona at the Darjeeling plantations.

Trade Memoranda.

THE guardians of the Southam Union are open to receive tenders for the supply of carbolic acid at per gallon, and chloride of lime at per cwt.; arrowroot and other drysalteries. March 21st.

Bromyard Union.—Supply of drugs for one year. March 19th.

Gateshead Union.—Supply of drugs for six months. March 16th.

Parish of Birmingham.—Supply of drugs for a year, and drysalteries for three months. March 16th.

Clun Union.—Cod liver oil, quinine, single and double trusses. March 25th.

Oxford Incorporation.—Supply of colza oil for thirteen weeks. March 21st.

Stow-on-the-Wold Union. — Oils and drysalteries for thirteen weeks. March 21st.

A New Gold Mine.—Why do not country chemists sell coffee? They sell packet tea and have done a very good stroke of business in that commodity, and there is nothing intrinsically more wicked in dealing in coffee than in supplying tea. Of course the grocers would not like it, but we ought to think of our wives and families before our neighbours. Besides, we do not like their selling some of our most juicy fruits, but it is of no use to grumble. The fact is, if some respectable and enterprising firm will put up canisters of really good coffee, and supply it *only* through chemists, he will be surprised at the result. We have no hesitation in saying just the same about cocoa. The public has faith in the family chemist, a faith which is well-grounded we are glad to say, and though we should be sorry to see that faith in the least degree abused, we think the trade may certainly cultivate it by extending the reason for it.

The publisher of the Chemist and Druggist has in stock some handsome reading cases to hold six numbers of this publication. These will be found very convenient by those who care to keep their papers in order. Price 2s. 6d. each, sent for enclosure to any London wholesale house, or 2s. 9d. post free.

Mr. Pendlebury, who secured the highest honour which Cambridge has to give, by being gazetted Senior Wrangler for the year, is the son of Mr. James Pendlebury, chemist, of Brownlow-hill, Liverpool. The academic career of this gentleman has been exceptionally brilliant, and presents an example which in some degree should stimulate the youths whose lives commence under circumstances somewhat similar to those of this hero.

We have recently established an agency for our journal in Paris, at 35, Rue Canmartin. Mr. P. D. Orvis is authorised to act for us in that city.

Mr. Guffery has removed his depôt for Cod Liver Dragées from 458, Oxford-street, to 7, Lonsdale-road, Barnes, London, S.W. These Dragées were noticed in the Chemist and Druggist for January, 1869.

Mr. Thomas Keating, of 79, St. Paul's Churchyard, died on the 23rd ult., at the age of 85. Up to within a few weeks of his death Mr. Keating came to his business daily, and few would have supposed his age to have been within ten or fifteen years of the actual number. He was, we believe, the oldest druggist in London.

Dr. Squire, until lately connected with the firm of Burgoyne, Burbidges and Co., has joined Messrs. Dunn and Co., of Finsbury, and will superintend the processes of their laboratories. The firm will henceforth be known under the style of Dunn, Squire, and Co.

A set of account books manufactured by Messrs. Letts Son and Co., on a system described as Quale's method, has been submitted to us. The pages of all the books are so ruled and headed as to show as nearly as possible, with but little mental effort, the exact position of each account, and its relation to the whole. There are a few books of the series which might with advantage be introduced into any business, whether the single or the double entry has been adopted. We would especially recommend to retail dealers the Waste-book and the Collecting-book, which seem well calculated to save the accumulation of a number of small and troublesome debts.

We have much pleasure in recommending Messrs. McMaster, Hodgson and Co's (Dublin) Fluid Extract of Annatto to those members of the trade residing in the cheese and butter producing districts. As far as we can judge without practical testing, it seems to us a superior and trustworthy preparation; and this we have long discovered cannot be said of Annatto as a rule. We hope our mention of it will induce a trial in England and abroad, as well as in Ireland, where we are informed it has already established its reputation.

GAZETTE.

PARTNERSHIPS DISSOLVED.

Campbell, H., and Black, R. J., surgeons, 70, Marquis-road, Canonbury.

Carless and Blagden, Hope Chemical Works, Hackney Wick.

Jenkins and Unsworth, aërated water manufacturers, Liverpool.

Laing, James, and Co., drysalters, Manchester and Huddersfield; so far as regards Arthur Laing.

Northcott, W. and J. S., drug brokers, 13, Rood-lane, London; so far as regards J. S. Northcott.

Russell and Byles, surgeons, Accrington, Lancashire.

Stansfield and Savage, mineral water manufacturers, Ripley, Surrey.

Watson, J. C., and Hirst, E., manufacturing chemists, Thornton, Yorkshire.

Wilson, J., and Rhodes, T. W., general practitioners in medicine, Chorlton-upon-Medlock.

Correspondence

THE PATENT MEDICINE STAMP AND LICENCE.

TO THE EDITOR OF THE "CHEMIST AND DRUGGIST."

Sir,—In the *Pharmaceutical Journal* for this month is a letter from "G. W.," which ably expresses the general feeling of the trade respecting the recent attempt of a section of the Council to abolish the Patent Medicine Stamp and Licence. With all that has been said *against* this proposal I fully agree, for I am satisfied that no worse blow could be struck at our best interests than to throw open this profitable branch of our trade to the competition of every oilman, grocer, and bookseller, who would not be slow to welcome this addition to their incomes. I wish, however, more particularly to call the attention of my brethren, both in town and country, to the fact that this proposal was brought forward by a section of our representatives in the Council without any notice to their constituents, and that this section is composed of men who, without *any* exception, are either getting their living by *dispensing* or the *manufacture of chemicals*. The mischief has been done, for I see the Commissioners of Inland Revenue *have been* "informed that the Council is strongly in favour of the abolition," and as our annual election will soon occur again, I hope the trade will not forget the men who brought forward and voted for the motion, which I see was proposed by Mr. Brady, seconded by Mr. Williams, and supported by Messrs. Bourdas, Carteighe, Evans, Mackay, Morson, Dymond, and Hills. May I ask our country members seriously to consider the question why year after year they persist in voting for so many West-end London men who know so little about the general wants of the trade, instead of sending up as their representatives some of their own body, and to whom we may apply the words—

> "Who knows what's right, not only so,
> But always practise what they know."

To conclude, I hope the trade will take this warning to heart, and in the words of Mr. Parry, instead of electing men to whom "*the sale of Patent Medicines is almost distasteful*," let us vote for some of our "*less favoured brethren*," who will not sacrifice the "*commercial substance*" for the scientific shadow.

Faithfully yours,
W. H. F.

P.S.—I think it only fair to tender to Messrs. Bottle, Deane, Edwards, Haselden, Randall, and Savage, my warmest thanks for their opposition to the motion.

TO THE EDITOR OF THE "CHEMIST AND DRUGGIST."

Sir,—May I be allowed to ask, through the medium of your columns, what is the object of the Pharmaceutical Council in memorialising the Board of Trade to alter or repeal the licence on Patent Medicines, and free them from duty? I have been informed that it is "for the best interests of the public," but I would remark that, during a period of thirty years I have been in the trade in different places—London and country—I never heard any complaint respecting the duty. I never heard of any one being damaged by purchasing patent medicines. The public use them very largely, and I therefore am led to suppose they are satisfied with them; and I believe my experience would be endorsed by the great majority of chemists. Pray inform me how public interests are endangered by the present sale of patent medicines. There is one point, I think, requires reform, that is, the unequal licence. Let the licence be equalized by all means. I would rather pay 20s. than 5s. as I now do—or would rather that the whole matter should remain as it is—than that the licence or duty should be repealed. I may, Mr. Editor, have been misinformed as to the object of the Pharmaceutical Council; if so, perhaps you or some of your correspondents will kindly correct my error, and inform me what is the real direction of this movement respecting the licence. My thirty years' experience enables me to say that the public are not dissatisfied with the patent medicines, or with the duty as it stands; and that the trade (or—I beg pardon—I should say profession) want no alteration except the equalization of licence. I am convinced that the proposed alteration would only be to the detriment of the trade and the great inconvenience and dissatisfaction of the public.

Yours obediently,

A Well-wisher to the Public and Chemist and Druggist.

[We reproduce from the Correspondence of the *Pharmaceutical Journal*, the following suggestive letter on the same subject.]

Sir,—I had not intended writing upon the stamp and licence question, from the feeling that I did not understand the merits of the case to my own satisfaction; but, after reading the correspondence which you have published upon the subject, I have concluded that, imperfect as is my own comprehension of the question, I may yet draw attention to some points which, if I cannot do aught to elucidate, I may at least make the extent and the evil of their obscurity more conspicuous.

In looking over the exemptions from the duty, I do not see anything which clearly exempts a cough mixture from duty, whether that mixture be the nostrum of the maker, or dispensed from the prescription of a medical man—if it be directed "A tablespoonful to be taken when the cough is troublesome." The exemptions, as quoted in the December Journal, page 317, show that mixtures are exempt if they have not a written label by which they are recommended for the relief of any ailment.* So by implication, it may be concluded that their having such a label renders them liable to the duty. My conviction is, that in such cases and many others, we are allowed to escape by sufferance, and at any time the law might be turned against us.

On the other hand, the Pharmacy Act, clause 16, reserves to all makers of patent medicines the right to make and vend the same, no matter what the composition may be, so long as the stamp and licence regulations be complied with; thus, Mr. Smith may make "Smith's laudanum," equal to B. P. tincture of opium, and sell the same stamped, though he possess no educational qualifications; and, if it suits his fancy or his pocket, he may make "Smith's Aconite Liniment," or "Strychnine Drops," with like freedom, and not be required to label them poison; the three-halfpenny stamp being capable of covering a multitude of sins.

If I be correct in these two interpretations, I think it cannot be questioned that the patent medicine laws require either total abolition or very considerable amendment. If, after having endeavoured to understand the law upon these two points, I have failed to do so, this of itself is evidence that the law is not such as it is desirable to perpetuate.

While the plea of ignorance will not protect us, the law ought to be so constructed that those who are under its daily operation should not find it impossible to understand its requirements.

So much for the necessity of some change, now for a word or two on either of the two propositions.

Suppose the law to be consolidated and rendered intelligible, and yet the stamp required upon medicines which were labelled with instructions for use in the alleviation of any complaint, I think the stamp should be *reduced* instead of increased, as some have suggested.

At present the duty is systematically evaded, because it is inconvenient and burdensome. I do not mean that there is a systematic breach of the law, but the duty is legally evaded by the omission of such directions as would render the medicines liable, the freedom from liability to the stamp being felt of greater moment than the convenience and safety of the patient. A law can only be considered to work well when there ceases to be a great and constant temptation to honest men to evade it. One of the greatest objections to the present arrangement is, that a medicine which is supplied with full directions regarding its use and properties—which is always desirable in the introduction of new remedies or new preparations of old remedies—requires to be stamped, and forthwith it becomes illegal for ever after to sell the same without a stamp, whether the instructions for its use in various maladies be continued or not. The introducer has, therefore, to choose between the omission of instructions which are in all respects desirable, or the making of his article into what is called a "quack medicine." If the stamp is to be continued, I think a reduction in its value to one penny in the shilling, and halfpenny stamps for smaller quantities, would do much to remove the burdensomeness of the impost, and not improbably produce a revenue equal to the present.

Supposing the patent medicine laws to be abolished altogether, then arises the question, how is the sale of secret and proprietary medicines to be regulated? Is that to be abolished also? If secret medicines are not to be abolished, will their sale be confined to the registered chemist, and will he be responsible for the poison-label appearing on all such as contain any of the scheduled drugs? To confine the sale to registered chemists, without making them in any way responsible for the contents or effects of the remedies so sold, appears to me to be seeking advantages under false pretences.

I should think it derogatory to our Society to aim at such a change, as I regard it a disgrace to our officials that vermin killers are placed in the second part of the schedule of poisons without regard to their composition.

If strychnine is to be sold for vermin killing, I do not know any principle of justice or of safety in allowing it to be sold to any stranger and without registration, on condition of its true name and nature being hidden under the words "Vermin Killer;" nor do I believe that the killers being placed upon this part of the schedule, will afford protection to any one who may be unfortunate enough to supply such, supposing an accident to occur, and if it were proved that he had sold strychnine without registration and without its being labelled as such.

I know of nothing more likely to bring our Society into public disgrace and distrust, than this disposition to retain the profit on the sale of these dangerous poisons, while we shirk the trouble of registration, and do not afford the public that protection which the Act was intended to provide.

Barnard Proctor.

Grey-street, Newcastle,
February, 1870.

PRESCRIBING AND DISPENSING.

TO THE EDITOR OF THE "CHEMIST AND DRUGGIST."

Sir,—Two years ago, I directed your attention to an old grievance of the suburban chemist—viz., an existing compact between leading physicians and certain dispensing establishments. As I am still personally interested in the matter, and as I believe that the majority of my suburban brethren are equally interested, I am glad your correspondent (Mr. Wade) has again brought the subject forward. I hope that with your valuable assistance this question may be fully ventilated, and that the result of the discussion may be the general recognition of a code of ethics favourable to the interests of hundreds of deserving business men who are now struggling on for bare existence, many wondering probably where the prescriptions of their neighbourhood go to, never dreaming that most of the leading medical men of the West are attached to certain dispensing houses by considerations of self-interest. If one of my customers consults a "big gun" of the West, he gives a fee of one or two guineas, which being accepted, is acknowledged to be adequate remuneration for the advice obtained.

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* See the last eight lines of the concluding paragraph of exemptions.

If the physician then requests that his prescription shall be taken to Messrs. So-and-so, as he cannot depend on the purity of medicines supplied by the greater number of chemists, my customer's confidence in my ability and in the quality of my drugs is upset. I question whether the doctor who has thus injured my character has rendered himself liable to an action at law for libel. Why, Sir, the simple instance given below will show you what effect this kind of special recommendation has on the retail trade. Some time since, a customer of mine told me she always walked three miles to Oxford-street for a small bottle of peppermint-water, and had done so for about two years frequently, because a doctor told her it was to be had good only at a certain house in that thoroughfare. If the afflicted and timid are advised in such a simple article as peppermint-water, the inference is they are led to believe that no medicinal preparations can be obtained pure except at the doctor's favoured house. I believe that the amount of injury to the suburban houses resulting from this system of medical touting is incalculable, for as many as three cases of lost custom in one week have come to my knowledge. Dr. So-and-So having sent the customers to a certain house, where he said the drugs were pure, how many hundreds of cases there must be of customers lost and the cause not known! Suppose, Sir, a pharmacist were to tell his customers that the professional ability of certain physicians was doubtful, and that their knowledge of drugs was at a low ebb, I fear he would find he had plunged into a hornet's nest. Probably, by having acted in this unjustifiable manner, he would have rendered himself amenable to an action at law.

I remain, Sir, yours respectfully,
March 5. Chemist.

THE PHARMACEUTICAL COUNCIL AND THE TRADE.

TO THE EDITOR OF THE "CHEMIST AND DRUGGIST."

Sir,—I have been waiting with considerable anxiety the issue of the *Pharmaceutical Journal* to see if any steps were proposed to remedy or avert the evil the Council are about to perpetrate. The letters of Mr. Wilkinson, Mr. Wade, and others, are very much to the purpose, and I shall refrain from repeating their lucid remarks, but there are other matters worthy of consideration. For the past twenty years the business has been in a declining condition, owing, in some measure, to circumstances that could not be averted, viz., the habits of the public requiring less medicine—and it not being fashionable—also the humbug of homœopathy, and more recently the co-operative system. These are bad enough without being further damaged by those who *pretend* to be our friends, viz., the Council of the Pharmaceutical Society.

The former schedules of poisons, restrictions, etc., have been generally accepted, many thinking the Council submitted to them reluctantly, but that they were driven to do something, and these were the best terms to be obtained. But now, what is to be thought when they come forward foremost to add such further restrictions that must tend to the ruin of half the retail chemists in the country by penalties and loss of trade!

It may be very well for those gentlemen in high position, earning their bread easily by extravagant charges and high connections, and who are favoured with the prescribers' *disinterested* recommendations; but there are thousands not so fortunately placed, and who have looked to the Council as protectors of the trade, and many who, like myself, have been contributing to the Society from its earliest day, and who are now sadly reminded of the fable of "The Countryman and the Viper."

It would be more creditable for the Council to protect the members from annoyances and fines, from any misunderstanding or inadvertent nonconformity with the existing law, than to elevate their worthy secretary to the dignity of a common informer.

How is it to be accounted for? Do the Council want to confine the trade to a comparatively aristocratic few, swamping their less fortunate brethren? or is it, as I have frequently heard, that they are truckling to the Medical Council? Much has been written in the *Journal* about chemists selling perfumery, paints, etc., as being derogatory; but this will now become more necessary than ever, being the only part which can be carried on free of danger from the informer, and chemists, as other men, have families (generally large ones) they are desirous of maintaining, and if they cannot do it by a *pure* drug business they must try other things. We are betrayed, and I must confess I cannot propose a remedy. I trust some one may be more fortunate, and concoct some organized opposition to the present state of things. I can only suggest that in the forthcoming and following elections all fresh men shall be proposed and voted for.

Now, with respect to the Benevolent Fund. I have no doubt the Council by progress and other means can much influence the elections; I have hitherto believed it to have been managed fairly, and as far as the funds admitted, liberally, but I have now lost all confidence in this. One thing is certain, the impending injury to the trade or profession, whichever you may choose to call it, will cause a great addition to the applications for help from this fund, and the same cause must most materially diminish the contributions thereto. Will the few magnates of the profession support the fund equal to the mites of the many?

Another evil will be increased. For years there has been a general complaint of the difficulty of getting efficient assistants. I believe it much to be attributed to this cause, viz., young men of good education and intelligence discern after a time the trifling, tedious, and hazardous nature of the business and the poor remuneration, they give it up and embark in more congenial and profitable pursuits, thus with a few exceptions we have only those left who have no energies or abilities for anything else; they also get puffed up with the pride and vanity of a pharmaceutical examination, all conducing to genteel beggary, and those remaining in the business will be compelled to play the part of Shakespeare's Apothecary, and murders, suicides, and accidents by poison will continue to increase (as they have for some years past) in defiance of Acts of Parliament or bye-laws of the Council. *The only true safeguard is the care and discretion of the vendor.* I should like to offer a few remarks respecting apprentices and some other matters connected with the Society; but perhaps I have already written more than you may feel disposed to publish.

My object is, that this should be taken up by some younger and abler hands than myself.

Yours, etc.,
One of the Founders of the Pharmaceutical
Feb. 6, 1870. Society.

CO-OPERATION *VERSUS* CO-OPERATION.

TO THE EDITOR OF THE "CHEMIST AND DRUGGIST."

Sir,—In reference to the wide-spreading evil which threatens us at the present time, through the very novel movement in connection with the Civil Service and other Co-operative Stores, your correspondent, "M. P. S.," in his communication to your last number, says somewhat despairingly, "At present we are getting the worst of it." In reply to which bit of wet blanketism—so to speak—I simply and emphatically say: This state of things is the result of the singular soporific supineness of the chemists and druggists themselves, and their unfortunate unprofitable want of *self*-preserving fraternisation as a body.

Now, I ask, are the *paid servants* of the public, with their ample salaries of £300 or £400 a year—more than the gross receipts of many a poor chemist—and those paid out of the pockets of tradesmen, to be allowed with impunity to open shops or "stores," and thereby diminish the pecuniary means of the latter, towards paying those very servants whom they, the public, have to their cost to support, in return for their light and red-taped labours? Let a meeting of the chemists and druggists be called, and a petition to the House of Commons drawn up, and consigned for presentation to two of the metropolitan members, who doubtless in a matter of such grave moment would give the prayer and spirit of the petition their hearty support.

Then again, as to the wholesale houses, whether druggists' sundrymen or patent medicine vendors, let a searching inquiry be made as to which of them countenance or abet this—to the trade at large—ruinously innovating system of dealing, a system involving—preposterous as it may appear—*retail vending at wholesale prices!* and when detection of co-operation or abetting is established on the part of such houses, let every account be promptly closed by the retail chemist and druggist. Of a verity, this would be a condign punishment in so serious a matter as that of placing in peril the trader's means of subsistence and that of his family.

Finally, let a deputation wait upon the Chancellor of the Exchequer, and remind him as to the effect this trading innovation on the part of already well-paid Government clerks must have in reducing, not only the incomes of shopkeepers of every class, but likewise their means of paying the *income* and other taxes, while the former must unquestionably as a consequence greatly fall off. I quite think with "M. P. S.," that if the tradesmen of England were to co-operate in this matter, they would make a considerable number of the Civil Service gentry appear "penny wise and pound foolish," "a consummation devoutly to be wished."

I beg to remain,
Your obedient servant and constant subscriber,
Kensington, February 22nd. J. C.

ATOMIC FORCE.

TO THE EDITOR OF THE "CHEMIST AND DRUGGIST."

Sir,—I have read with a good degree of interest a communication by T. R. Frazer, M.D., in a recent issue of your journal, on the nature of atomic action. I cannot agree with you in your note of dissent, that his paper is either rhapsodical or speculative. It seems to me that you have overlooked the object of his communication, otherwise you would not have dissented from it on the ground that he has "left the beaten track of science." Science has confessedly a difficulty on the point which Dr. Frazer makes an honest effort to explain. It is acknowledged on all hands by men of science, that we have no knowledge of the primary force in nature. Dr. Frazer undertakes to show what this primary force is, or, at all events, its first movements in connection with matter. If he has made a discovery, it is no reply to make to him that it is unknown to science, or that it looks like something advanced by Aristotle, or some of the earliest Greek philosophers. The only question to decide is, does his theory explain the phenomena of atomic action? This is what he set out to do in answer to some remarks made by M. Dumas in his Faraday lectures, published in your journal, in which it was denied that such action could be explained. What Dr. Frazer proposes to show is, that the seed and the egg is produced by a law and process similar in operation to that whereby the plant is produced from the seed and the bird from the egg.[*] In other words, he attempts to explain the *modus operandi* of creation.

Regarding the atomic theory, there is at present a great deal of controversy among men of science, especially as to whether an atom is divisible or not. Setting this point entirely aside, Dr. Frazer propounds a new theory which may be called the dual, or magnetic theory. He claims to have discovered that atoms consist of but two classes only; that both classes have magnetic properties; that they attract and repel each other when similar in class and nature; that both classes have other properties peculiar to themselves; hence, that both are positive, and that on the principle of attraction, repulsion, position, and reciprocal action, in these intermingling atoms the existence and form of all natural phenomena under deity can be accounted for.

These are facts, or they are not. If they are facts, they can be subjected to the demonstration of experiment. If they are not facts, the reasoning based on their alleged truth can be easily set aside and the theory shown to be fallacious. With due deference to your note of dissent, it appears to me Dr. Frazer has demonstrated the correctness of his theory by a mass of facts, in relation to which there can be no controversy. That he has not presented his theory in the happiest style, ought not to be used as a reason for treating it as something rhapsodical and speculative. Men of science would do well to subject his theory to a rigid analysis. It will be found to contain the elements of essential truth, and in harmony with all known science.

Halifax, N. S., Feb. 24th, 1870. A. M'Arthur.

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[*] See Faraday and Dumas, Chemist and Druggist, page 864.

NOTES AND QUERIES

A. Lumby (Birkenhead).—According to our reading of the regulations, the label need only bear the words "Vermin Killer" and "Poison," in addition to your name and address. The entry of sales in the Poison Book is a regulation which only applies to the articles in Part I. of the List of Poisons.

A Strong Mixture.—*A Country Chemist* hands the following copy of a prescription which he received over the counter a short time ago, the patient stating that her usual dose was a tablespoonful:—

℞. Morph. mur. ... ... gr. 160.
Acid. hydrochlor. dil. ... ... ʒss.
Spirit. Vin. rect ... ... ʒj.
Aq. ferv. ad. ... ... ℥x. M.
Sig.—The morphia mixture "*Poison.*"

Our correspondent states that the purchaser took more than a tablespoonful in his presence, and said that she was satisfied as to the purity of the ingredients. He asks whether it is in accordance with the Pharmacy Act to dispense such a prescription to an unknown person, and desires our candid opinion of the prescription. We are not surprised at the nature of the prescription, as we know people who are in the habit of taking very large doses of hydrochlorate of morphia. Provided that the *Country Chemist* entered the prescription in his book, with the name of the person to whom the mixture was sold, we believe that the regulations of the Pharmacy Act were fully observed. But there are certain considerations which ought to outweigh the simple desire to act in conformity with an Act of Parliament, and we hold that a chemist is not justified in dispensing such a prescription for an unknown person without overpowering evidence of the patient's poison-proof constitution.

Syr. Ferri et Quinæ Hypophosphitis. *R. H.* (Tunbridge Wells).—Syrup of hypophosphite of iron, 10 fl. oz.; hypophosphite of quinine, 20 grains. Rub the quinine salt in a porcelain mortar with an ounce of the syrup, and having placed the remainder of the syrup in a capsule, add this to it, and apply a gentle heat until a clear solution is produced. Dose: a tablespoonful containing four grains of hypophosphite of iron, and one grain of hypophosphite of quinine.—(H. N. Draper.)

Black Hair Dye.—*E. T. C.* You will be able to construct a good formula from Mr. Matthews's Report on "Hair Restorers," communicated to our journal in February, 1869. Many formulæ are given in Beasley's *Druggists' Receipt Book.*

Chemicus.—Barlow's *Practice of Medicine* (Churchill), and Copland's *Dictionary of Practical Medicine* (Longmans), would, probably, be useful additions to your library. We do not profess to know much about medical practice, and believe that such a work as Beasley's *Book of Prescriptions* would amply satisfy the legitimate requirements of counter-prescribing. The articles by Mr. Hunting, printed in our pages, reflect the most approved Veterinary practice.

W. F. B. (Birmingham).—1. The articles on Chloral, published in our journal during the past three months, give the results of the latest researches. We can direct you to a better source of information. 2. The accounts of recent discoveries are communicated to the scientific journals before they appear in the standard works on chemistry. Watts's *Dictionary of Chemistry* is the most comprehensive work on modern chemistry. 3. We can recommend the book by Mr. Gill, noticed in another page, also Roscoe's *Lessons on Elementary Chemistry.* We cannot say anything in favour of the book you have named.

Communications Received.—F. Crace Calvert, F.R.S.; H. N. Draper, F.C.S.; H. King; J. Corder; A. Matthiessen, F.R.S.; T. Jull; E. Beynon; F. Baden Benger; Edwin Fisher; W. Coleford; J. Young; J. Wade; G. Brown; H. W. Maleham, etc.

PATENTS

[The following list has been compiled expressly for the CHEMIST AND DRUGGIST, by L. de Fontainemoreau, Patent Agent, 4, South-street, Finsbury, London; 10, Rue de la Fidélité, Paris; and 3, Rue des Minimes, Brussels.]

Provisional Protection for six months has been granted for the following:—

3319. K. Ogden, of Manchester. An improved deodorising compound to be employed in chambers or receptacles containing dead bodies, or bodies affected with a contagious disease. Dated 18th Nov., 1869.

97. W. H. Balmain and W. J. Menzies, both of St. Helen's, Lancaster. Improved means for conveying and storing vitriol. Dated 12th Jan., 1870.

135. T. Weltou, of Grafton-street, Fitzroy-square. Improvements in stoppers for jars, carboys, bottles, casks, and other vessels, and in the manufacture of such articles to which the stoppers may be applied. Dated 17th Jan., 1870.

148. T. C. Floggett, of Plymouth. An improved process and solution for preserving meat and other perishable substances. Dated 18th Jan., 1870.

153. J. H. Johnson, of London. Improvements in the treatment of acid tars obtained from boghead, mineral, schist, or petroleum. Dated 18th Jan., 1870.

157. E. T. Hughes, of London. Improved apparatus for diminishing the effects of the oscillation of vessels, and for preventing sea-sickness. Dated 19th Jan., 1870.

164. J. A. D. Cox, of Notting-hill. An improved vehicle or composition to be mixed with white lead and other pigments, in lieu of linseed or boiled oil, turps, and dryers, to form paint. Dated 19th Jan., 1870.

130. D. Spill, of Hackney. Improvments in the treatment of xyloidine to be employed for purposes useful in the arts. Dated 20th Jan., 1870.

196. J. Paton, of Paisley, and P. and R. Harris, of Glasgow. Apparatus for generating carbonic-acid gas for application to the extinction and prevention of fire. Dated 22nd Jan., 1870.

202. H. M. Whitehead, of Lime-street-square. Improvements in preparing blocks of animal and vegetable materials for making soup or other liquid food. Dated 22nd Jan., 1870.

203. W. T. Waite, of Southampton. Improvements in the preparation of animal charcoal for use in treating saccharine solutions. Dated 22nd Jan., 1870.

204. W. T. Waite, of Southampton. Improvements in filtering saccharine solutions and other liquids, and in means or apparatus employed therein. Dated 22nd Jan., 1870.

205. W. Garton, of Southampton. Improvements in the preparation of fermentable saccharine matters. Dated 22nd Jan., 1870.

208. F. A. Barrow, of Glasgow. Improvements in apparatus for evaporating and concentrating liquids, and in recovering re-agents from oil refiners' and other bye-products. Dated 22nd Jan., 1870.

216. R. S. Dale and C. Schorlemmer, of Manchester. Improvements in preparing colouring matters. Dated 24th Jan., 1870.

219. F. Kohn, of Westminster. An improved method of extracting juices from plants, and of separating liquid or soluble matter from solids. Dated 24th Jan., 1870.

260. J. Dewar, of Kirkcaldy, Fife. Improvements in the treatment of certain substances for food and for manure. Dated 28th Jan., 1870.

291. C. W. Fuller, of Gracechurch-street. Improvements in the construction of bottles to contain aërated and other liquids, and in the mode of stoppering the same, and other similar vessels. Dated 1st Feb., 1870.

305. W. R. Lake, of London. An improved automatic apparatus for producing carbonic acid for the manufacture of effervescing or gaseous liquids, and for the application of such liquids to various purposes. Dated 2nd Feb., 1870.

308. A. M. Mort, of George-street, Euston-road. A new compound and process for eliminating diseases and the cause of disease from the human body. Dated 2nd Feb., 1870.

338. W. T. Shaw, of Manchester. Improvements in machinery or apparatus for preparing lard. Dated 5th Feb., 1870.

364. G. W. Wigner, of St. Swithin's-lane. Improvements in the mode of and apparatus for treating and purifying sewage. Dated 8th Feb., 1870.

276. C. Bardy, of Paris. Improvements in preparing and obtaining colouring matters. Dated 9th Feb., 1870.

430. A. Fryer, of Manchester. Improvements in the preparation and preservation of animal and vegetable substances to be used as food and for other purposes, and in apparatus connected therewith. Dated 14th Feb., 1870.

Letters patent have been issued for the following:—

2403. C. Crossley and R. Whipp, both of Manchester, and T. Crossley, of Rochdale, Lancaster. Improvements in the manufacture of size. Dated 11th Aug., 1869.

2443. J. D. Dale and E. Milner, of Warrington, Lancaster. An improved method of producing white pigments from lead. Dated 16th Aug., 1869.

2482. F. Braby, of Euston-road. Improvements in the means and apparatus for the manufacture of caustic ammonia and ammoniacal salts. Dated 19th Aug., 1869.

2532. W. Brown, of Portsmouth. Improvements in the mode of constructing and disposing ships' cabins to prevent sea-sickness, the said improvements being also applicable to gun-carriages on board ship. Dated 25th Aug., 1869.

2589. A. M. Davis, of Bromley, Kent. Improved aërated alcoholic drinks. Dated 1st Sept., 1869.

2624. W. E. Gedge, of London. Improvements in apparatus for rectifying alcohols. Dated 6th Sept., 1869.

2706. C. Eskrett and H. Searle, both of Kingston-upon-Hull, York. Improvements in "envelopes" or "hairs" used in extracting oil from oleaginous seeds, and in oil-cake making. Dated 16th Sept., 1869.

3400. J. Downs, of Kingston-upon-Hull, York. Improved hydraulic presses used for seed crushing, oil expressing, and other similar purposes. Dated 24th Nov., 1869.

3597. W. R. Lake, of London. An improved mode of and means for preserving dead human bodies and animal carcases. Dated 13th Dec., 1869.

3700. W. Gossage, of Widnes, Lancaster. Improvements in treating gases evolved during the processes of smelting copper ores, so as to prevent the noxious action of such gases on vegetation. Dated 21st Dec., 1869.

Specifications published during the month. Postage 1d. extra:—

1809. A. Lafargue. Apparatus for weighing and registering. 10d.
1832. W. Smith. Treating mineral oils. 4d.
1850. G. W. Fox. Treating medicinal oils. 4d.
1892. R. Olpherts. Indigo presses. 1s.
1893. O. Olsson. Preserving animal and vegetable substances. 4d.
1927. J. Macintosh. Waterproof varnishes and paints. 4d.
1936. H. Caro, C. Graebe, and C. Liebermann. Preparing colouring matters. 4d.
1938. A. B. Childs. Uterine supports. 4d.
1947. T. Gray. Varnishes. 4d.
1948. W. H. Perkin. Colouring matter. 4d.
1957. W. R. Lake. Rendering and refining lard, tallow, etc. 10d.
1970. W. E. Gedge. Incorporating extract of meat with other ingredients. 4d.
1976. J. Robinson. Preserving animal and vegetable substances. 4d.
1980. W. Colman and S. Turton. Feeding bottles. 8d.
1990. H. Larkin and W. White. Producing sodium and potassium. 4d.
2003. J. Smithers. Galvanic batteries. 4d.
2012. A. H. A. Durant. Treating castor and other seeds for manufacturing oil. 4d.
2028. G. Buchanan. Preserving animal and vegetable substances, etc. 8d.
2039. W. Pidding. Obtaining scents. 4d.
2046. A. P. Price. Producing anæsthesia. 4d.
2054. J. H. Johnson. Preparing and preserving meat. 10d.
2157. H. Mege. Producing fatty bodies. 6d.

TRADE REPORT.

THE handsome surplus which the Chancellor of the Exchequer will probably have for disposal when the Budget is brought forward, ought to afford some little comfort to the British taxpayer. Sentimentally, the prospect is pleasing; practically, we do not see very clearly in what way we can congratulate our readers upon it. Chemists and druggists have not, as far as we are aware, any serious fiscal grievances to complain of. Almost the only tax which may be said to be levied on them specially, namely, the patent medicine stamp, they are determined not to be robbed of, and, therefore, it happens that perhaps of all classes from whom the revenue of the United Kingdom is derived, we are the most quiet and contented. But as we have nothing to ask Mr. Lowe for, it follows that we have nothing very particular to hope for, except as units of the whole community. So that, whether the maltsters, or the grocers, or whichever of the other classes who are just beginning to clamour for the plums in the cake before us get their wishes, we can only expect to be able to pick up a few of the crumbs which may happen to fall from the grasp of the fortunate winners.

It is disappointing to find from the new Tariff Bill, lately introduced into the American House of Representatives, that there is not, as yet, any prospect of an amelioration of the restrictive Customs' duties which have so long hampered our commercial relations with the United States. The new Bill has been framed in the interests of the protectionists, on the plan of decreasing duties on raw materials, and on articles not competing with American manufacturers, while it increases the duties on articles which do compete. It is satisfactory to be assured that there is a strong and increasing party in the United States, however, who see that the present system has immediate and prospective disadvantage to the nation at large, which vastly outweigh the temporary addition to the revenue, and from this nucleus we hope, ere long, to hail the final triumph of free trade principles in the country which ought to be their stronghold.

All authorities agree that the trade of 1870, so far as we have yet advanced, is at least satisfactory. This definition is perfectly applicable to the drug and chemical markets. In the former the supply has been rather interfered with by the severe weather which has prevailed lately, keeping back some of the homeward bound vessels. At the last sales a fair demand was experienced, though prices have not varied greatly. A speculative demand for camphor has sprung up of late, and the price has gradually advanced. Holders are said to be very firm, although the stock is large. The arrival of new supplies will be sure to bring prices down to the low figures we have been accustomed to lately. Some new imports of Rhubarb of not particularly rare quality were sold at the same prices as heretofore. Aloes: Cape have been rather on the decline of late, but of 234 cases offered fully two-thirds sold; one lot Hepatic kind 31s. 6d., good to fine 26s. to 30s., fair 24s. 6d. to 26s., coarse drossy or soft 20s. to 24s. per cwt. East India: only good dry are wanted, other kinds are plentiful and out of demand. 18 boxes good Soccotrine sold at £12 15s., little dark and soft £8, and good middling Hepatic £6. 31 packages bought in from £4 to £7 for rather drossy to good soft.—Bees' Wax is looking up, and most kinds are 10s. dearer. Scarcely any East India has been offered, 4 chests Madras yellow sold at £9 per cwt. Cochin: yellow we quote at £8 10s. to £9, and white £10 10s. to £11 10s., but none has been offered for some time; it might probably bring more from the position of other descriptions of Wax.—Bucha Leaves are in limited request, 10 bales good fair round leaf sold at 4d. to 4¾d., 2 bales long narrow but stalky were bought in at 5½d., and 11 bales good long leaf withdrawn. Cardamoms are arriving freely, and our late quotations are not obtainable. 15 cases of fair Malabar, a little stalky and mixed with some brown and small, were sold at 8s. 9d. to 8s. 6d. 10 cases fair Aleppee selling at 8s. 7d. to 8s. 4d. 15 bags Ceylon were held for 3s. to 3s. 3d. per lb., and in limited demand.—Cocculus Indicus sells slowly, and out of 224 bags at public sale only one lot sold at 22s., remainder taken out at same price.—Cubebs are lower. 50 bags good Singapore early in the month were held for 38s., but 39 bags at last drug sales sold at 33s. for good middling.—Dragons' Blood: 8 cases sold fair to good lump £6 5s. to £7 5s., very middling £4 7s. 6d. to £4 10s.—Musk: late arrivals have met a ready sale. 60 caddies of Tonquin have been offered, first pile, picked pods, a little damp and bally, sold from 30s. to 34s., 2nd pile, pickings sold at 21s. to 22s., part bought in 24s. to 25s. per oz.; Grain, 11 tins good sold from 50s. 6d. to 55s., and dark and damp with ammoniac 44s. 6d. to 48s. 6d. per oz.; Caberdine, 4 caddies, good pods sold at 18s. to 18s. 6d. per oz.—Nux Vomica: none offered.—Senna: no arrivals. 59 bales Tinnevelly part sold low middling to good middling 3¼d. to 5½d., very ordinary 2½d., remainder bought in, ordinary to good 3d. to 9d. Bombay, 10 bales withdrawn above value.—Soy has arrived freely: on the 17th and 18th ult. 220 casks China, part only sold from 2s. 9d. to 3s. 1d., the bulk being bought in at the former figure.—Tamarinds: the market has improved since the commencement of the year, and good fresh would sell from 15s. to 20s. per cwt. Of 135 casks Calcutta recently offered, part of the sound sold at 15s. per cwt. for rather stoney.—Vermillion: nothing offered, good China is wanted, and would sell from 3s. to 3s. 1d. per lb. Opium has fluctuated during the month, but now quoted same as last.—French Quinine has brought higher prices.—Gums—Assafœtida: none offered; wanted.—Arabic: 460 packages offered and mostly sold.—Copal is in good demand, and sales made to arrive at full prices; nothing has been offered this month.—Damar continues neglected, and as large importations are expected, deters buyers from making purchases.—Gamboge: Sales were readily made at the beginning of the month at £15 to £15 5s, at which 19 cases of good fair pipe, little run, sold, but last week there was rather less disposition to purchase, and buyers would not pay previous prices, and 16 cases were bought in at £14 10s. to £15 per cwt.—Kino is very dull of sale.—Myrrh sells well, particularly good.—Olibanum: nothing has been offered for some time past except a parcel of second sorts from Liverpool, which was bought in at 80s. per cwt.

CHEMICALS.

Tartaric and Citric Acids are both in favour of sellers.—Soda is firm.—Potash inquired for.—Prussiate higher.—Alum in fair demand.—Sulphur quiet.—Bleaching Powder 3d. lower.—The manufacturers' reports as to the export demand for chemicals are encouraging, prices in almost all cases being well maintained.

DRYSALTERIES.

Argol: Cape is rather easier.—Cutch is very quiet and depressed, and no direct imports offered of late.—Gambier is also quiet, and very little actual business doing, and out of 938 cases recently offered at auction only a few lots of good block sold at 18s. to 18s. 6d. per cwt.; privately a moderate quantity has been sold at 17s. 6d. to 17s. 9d. per cwt. for fair quality; earlier in the month 50 baskets fine pale free sold at 20s. 6d. to 20s. 9d. per cwt.; good cubes were bought in at 20s. 6d.—Galls are held firmly; 870 chests China have been at auction, of which nearly one-half sold at 49s. to 49s. 6d. for good bold partly broken, the remainder being taken out at 50s. to 52s. per cwt. Privately some quantity has changed hands at 49s. 6d., and the same figure has been offered for a parcel of Japan and refused.—Lac Dye is very firm, and a large business has been doing in it at very full rates.—Safflower continues dull and drooping—Myrabolanes are looking a little firmer.—Madder Roots are looking up, and very few offering. Nothing afloat.—Munjeet is dearer, and nothing in the market.—Sapan Wood is a little easier, and rather more offering.—Turmeric: Bengal is firm, and 21s. per cwt. has been paid for 500 bags fair quality.—Red Saunders' Wood continues in demand; 50 tons have been sold to arrive at £8 2s. 6d.—Saltpetre: the market has become very firm, and prices have been daily hardening; on the spot a good business has been done.

OILS.

A slight improvement has taken place in Linseed, which has found buyers on the spot at £32 to £32 5s., and for April-May-June at £33. The Hull market has also been firmer, and rules at £31 15s. to £32 on the spot, and £32 to £32 5s. month. The demand for Rape Oil has been limited, and sales of English brown on the spot were made at £41 5s. to £41 10s., but owing chiefly to an important advance in Paris, an upward movement set in here, and £42 has been recently paid, and business to some extent has been done at £41 10s. May-July, £41 for May-August, and at £40 for September-December, and rather higher prices are now asked for forward deliveries. Refined, on the spot, £44 to £44 10s., and Foreign has been sold at £45 to £46 as to quality and quantity. Cotton Oil has continued dull, and Refined of good quality is obtainable on the spot at £36, while Hull has changed hands at £34 to £34 5s. The market for Olive has been inactive, and a small quantity of Mogador at £53 is the only sale reported. Lower prices would be accepted for arrival, and would have to be taken on the spot to effect sales. Cocoanut has been in little request at £42 for Ceylon, while Cochin, which keeps firm at £46 for fine, has moved off slowly. A parcel of the former is reported to have been sold for arrival at £42 10s. Only 60 casks were offered by auction, and 12 casks Sydney, brownish to fair, at £37 to £37 15s. was all that found buyers. With a moderate demand for export, sales of Palm have been effected at £40 to £10 10s. for Lagos, and £38 for inferior, but none has been brought forward in auction. Sperm has continued firm at £90 for American and at £91 for Colonial; indeed, for a small quantity of the latter £92 is said to have been paid. In common Fish Oils there is no change, and little business to mention except a sale of 30 tuns Shark at £35.

Petroleum has been in rather better demand, and holders of American refined are firm at 1s. 10d. to 1s. 11d., as to test. 400 barrels Portland Oil sold at 1s. 10½d., now a higher price is required. For arrival 1s. 8d. has been accepted for SW; Refined Coal of the finest quality has found buyers at 1s. 8d., but other qualities are saleable with difficulty. Naphtha is 1s. 6d. to 1s. 7d., the stock being moderate, and in second hands. Our stock of Refined Petroleum is 4710 barrels and 14,380 cases, and the deliveries last week were equal to 781 barrels against 13,459 and 1440 barrels respectively same time last year.

Rosin has maintained previous rates, but not much business has been done; the spot price is still 5s. 7¼d. for strained American; there are buyers for arrival at 5s. 6d., and sellers at 5s. 9d.

Turpentine.—The market has been steady at 30s. 3d. to 30s. 6d. for American Spirits on the spot.

Monthly Price Current.

e prices quoted in the following list are those actually obtained in Mincing-lane for articles sold in bulk. Our Retail Subscribers must not expect to purchase at these market prices, but they may draw from them useful conclusions respecting the prices at which articles are offered by the Wholesale Firms.]

HEMICALS.

	1870. January.					1869. January.				
CIDS—	s.	d.	to	s.	d.	s.	d.	to	s.	d.
Acetic ....per lb.	0	4	..	0	0	0	4	..	0	0
Citric ....per lb.	2	4	..	0	0	2	8½	..	0	0
Hydrochlor. ....per cwt	4	0	..	7	0	4	0	..	7	0
Nitric ....per lb.	0	5	..	0	5½	0	5	..	0	5½
Oxalic .... ,,	0	7½	..	0	0	0	8	..	0	0
Sulphuric ...... ,,	0	0¾	..	0	1	0	0¾	..	0	1
Tartaric crystal .. ,,	1	2½	..	0	0	1	3	..	0	0
powdered ,,	1	2¾	..	0	0	1	3¼	..	0	0
ANTIMONY ore......per ton	260	0	..	300	0	280	0	..	300	0
crude ..per cwt	36	0	..	0	0	25	0	..	26	0
regulus.. ,,	65	0	..	68	0	48	0	..	50	0
star .... ,,	67	0	..	68	0	48	0	..	50	0
ARSENIC, lump...... ,,	16	0	..	16	6	16	0	..	16	6
powder.... ,,	7	6	..	7	9	7	6	..	8	0
BRIMSTONE, rough ..per ton	160	0	..	0	0	160	0	..	165	0
roll ....per cwt	11	0	..	0	0	12	0	..	0	0
flour.... ,,	11	0	..	0	0	14	0	..	14	6
IODINE, dry ....per oz.	0	9	..	0	9½	0	9¾	..	0	10
IVORY BLACK, dry..per cwt.	0	0	..	0	0	0	0	..	0	0
MAGNESIA, calcined..per lb.	1	2	..	0	0	1	6	..	1	8
MERCURY...... .. per bottle	137	0	..	138	0	137	6	..	0	0
MINIUM, red ......per cwt.	20	9	..	21	0	20	9	..	21	0
orange .... ,,	31	6	..	32	6	31	9	..	32	6
PRECIPITATE, red ....per lb.	2	6	..	0	0	2	6	..	0	0
white .. ,,	2	5	..	0	0	2	5	..	0	0
PRUSSIAN BLUE ...... ,,	0	0	..	0	0	1	0	..	1	10
SALTS—										
Alum ....per ton	145	0	..	155	0	150	0	..	155	0
powder .... ,,	165	0	..	170	0	170	0	..	175	0
Ammonia:										
Carbonate ......per lb.	0	5¾	..	0	6	0	5¾	..	0	6
Hydrochlorate, crude, white........ per ton	480	0	..	560	0	500	0	..	510	0
British (*see* Sal Ammoniac)										
Sulphate ......per ton	335	0	..	355	0	330	0	..	340	0
Argol, Cape ......per cwt	55	0	..	70	0	70	0	..	85	0
France .... ,,	45	0	..	58	0	45	0	..	60	0
Oporto, red ,,	22	0	..	24	0	24	0	..	25	0
Sicily .... ,,	32	0	..	40	0	45	0	..	50	0
Naples, white ,,	0	0	..	0	0	55	0	..	65	0
Florence, white	0	0	..	0	0	70	0	..	75	0
,, red ,,	0	0	..	0	0	60	0	..	05	0
Bologna, white ,,	0	0	..	0	0	0	0	..	0	0
Ashes (*see* Potash and Soda)										
Bleaching powd..per cwt.	8	2	..	8	6	10	9	..	11	0
Borax, crude .... ,,	25	0	..	40	0	25	0	..	35	0
(Tincal) .. ,,	55	0	..	65	0	30	0	..	52	0
British refnd. ,,	68	0	..	70	0	66	6	..	0	0
Calomel ....per lb.	2	5	..	0	0	2	5	..	0	0
Copper:										
Sulphate ......per cwt.	23	6	..	24	0	25	6	..	27	0
Copperas, green ..per ton	52	6	..	60	0	57	0	..	60	0
Corrosive Sublimate..p.lb.	1	11	..	0	0	1	11	..	0	0
Cr. Tartar, French, p. cwt.	82	0	..	0	0	85	0	..	0	0
Venetian grey ,,	83	0	..	0	0	0	0	..	0	0
brown ,,	0	0	..	0	0	70	0	..	72	6
Epsom Salts ....per cwt.	7	6	..	8	0	8	0	..	8	6
Glauber Salts .... ,,	4	6	..	6	0	5	6	..	0	0
Lime:										
Acetate, white, per cwt.	12	6	..	23	0	12	6	..	22	0
Magnesia: Carbonate ,,	42	6	..	0	0	42	6	..	0	0
Potash:										
Bichromate ....per lb.	0	5½	..	0	5½	0	5	..	0	0
Carbonate:										
Potashes, Canada, 1st sort ......per cwt.	31	9	..	32	0	32	0	..	0	0
Pearlashes, Canada, 1st sort ......per cwt.	32	0	..	33	0	32	0	..	0	0
Chlorate ....per lb.	0	10	..	0	10½	1	0	..	0	0
Prussiate ...... per lb.	1	0	..	0	0	1	0	..	0	0
red .... ,,	1	9½	..	1	10	1	9½	..	1	10
Tartrate (*see* Argol and Cream of Tartar)										
Potassium:										
Chloride ......per cwt.	8	0	..	0	0	8	0	..	8	3
Iodide.......... per lb.	11	0	..	12	0	12	0	..	0	0
Quinine:										
Sulphate, British, in bottles ...... per oz.	5	10	..	6	0	5	9	..	0	0
Sulphate, French ,,	5	8	..	0	0	5	4	.	0	0
Sal Acetos ....per lb.	0	10	..	0	0	0	10½	..	0	0
Sal Ammoniac, Brit. cwt.	41	0	..	42	0	36	0	..	38	0
Saltpetre:										
Bengal, 6 per cent. or under ......per cwt.	22	0	..	23	3	24	3	..	24	0
Bengal, over 0 per cent. per cwt.	21	0	..	22	6	23	0	..	24	6
Madras........ ,,	20	0	..	21	0	0	0	..	24	0
Bomb & Kurrachee p.ct.	0	0	to	0	0	0	0	..	0	0
European...... ,,	25	0	..	26	0	0	0	..	0	0
British, refined ,,	26	6	..	27	0	29	0	..	29	6
Soda: Bicarbonate, p.cwt.	9	0	..	0	0	11	6	..	0	0
Carbonate:										
Soda Ash....per deg.	0	1¾	..	0	0	0	1⅞	..	0	0
Soda Crystals per ton	77	6	..	0	0	58	0	..	0	0

	1870.					1809.				
Soda:	s.	d.		s.	d.	s.	d.		s.	d.
Hyposulphite..per cwt.	13	6	..	14	0	18	0	..	0	0
Nitrate........ ,,	16	0	..	16	3	15	8	..	15	6
SUGAR OF LEAD, White, cwt.	39	0	..	40	0	40	0	..	42	0
Brown .... ,,	20	0	..	28	0	29	0	..	30	0
SULPHUR (*see* Brimstone										
VERDIGRIS .... per lb.	1	0	..	1	2	0	11		1	0
VERMILION, English..per lb.	2	4	..	2	6	2	6	..	3	0
China.... ,,	3	0	..	3	1	2	9	..	0	0

DRUGS.

ALOES, Hepatic....per cwt.	60	0	..	160	0	90	0	..	180	0
Socotrine .. ,,	100	0	..	220	0	140	0	..	200	0
Cape, good.. ,,	28	0	..	30	0	29	0	..	32	0
Inferior ,,	17	0	..	27	0	16	0	..	28	0
Barbadoes ,,	80	0	..	220	0	70	0	..	190	0
AMBERGRIS, grey........ oz.	27	6	..	30	0	27	6	..	32	0
BALSAMS—										
Canada ....per lb.	1	2	..	0	0	1	3	..	0	0
Capivi .... ,,	1	10	..	1	11	1	11½	..	2	0½
Peru .... ,,	7	8	..	7	10	11	6	..	12	0
Tolu .... ,,	2	2	..	2	3	2	3	..	0	0
BARKS—										
Canella alba ....per cwt.	20	0	..	34	0	30	0	..	45	0
Cascarilla........ ,,	22	0	..	84	0	23	0	..	35	0
Peru, crown & grey per lb.	0	10	..	2	3	0	10	..	1	11
Calisaya, flat ,,	3	9	..	3	11	2	10	..	3	6
quill ,,	3	9	..	3	10	2	8	..	3	3
Carthagena ,,	1	0	..	1	11	0	10	..	1	6
Pitayo .... ,,	0	6	..	1	5	0	8	..	1	4
Red .... ,,	1	6	..	7	0	3	0	..	0	0
Bucho Leaves ...... ,,	0	3	..	0	6	0	4	..	0	8
CAMPHOR, China.. per cwt.	92	6	..	0	0	117	6	..	0	0
Japan ,,	97	6	..	0	0	120	0	..	122	6
Refin Eng. per lb.	1	3¼	..	0	0	1	8	..	0	0
CANTHARIDES ...... ,,	3	0	..	4	0	2	2	..	2	3
CHAMOMILE FLOWERS p. cwt	40	0	..	72	6	60	0	..	100	0
CASTOREUM .... per lb.	4	0	..	32	0	5	0	..	32	0
DRAGON'S BLOOD, reed p. ct.	100	0	..	160	0	100	0	..	200	0
lump ,,	100	0	..	200	0	100	0	..	220	0
FRUITS AND SEEDS (*see also* Seeds *and* Spices.										
Anise, China Star pr cwt.	120	0	..	125	0	102	6	..	0	0
German, &c. ,,	25	0	..	38	0	30	0	..	38	0
Beans, Tonquin .. per lb.	0	10	..	1	6	1	2	..	1	6
Cardamoms, Malabar good ,,	7	10	..	8	6	7	9	..	8	3
inferior ,,	5	9	..	7	0	6	0	..	7	3
Madras ,,	4	6	..	8	4	4	6	..	8	3
Ceylon ,,	2	6	..	2	10	2	8	..	3	0
Corozo Nuts.... per cwt.	12	0	..	15	0	14	0	..	18	0
Cassia Fistula.. ,,	16	0	..	35	0	15	0	..	28	0
Castor Seeds .. ,,	10	6	..	12	0	11	0	..	13	0
Cocculus Indicus ,,	20	0	..	22	0	24	0	..	26	0
Colocynth, applo.. per lb.	0	4¾	..	0	8	0	5	..	0	10
Croton Seeds .. per cwt.	45	0	..	55	0	82	0	..	86	0
Cubebs .... ,,	32	0	..	35	0	41	0	..	42	0
Cummin........ ,,	90	0	..	100	0	40	0	..	50	0
Dividivi .... ,,	10	6	..	12	6	10	6	..	12	6
Fenugreek...... ,,	12	0	..	17	0	9	0	..	14	0
Guinea Grains .. ,,	36	0	..	0	0	38	0	..	40	0
Juniper Berries ,,	7	6	..	8	6	7	0	..	8	0
Myrobalans .... ,,	7	0	..	15	6	10	0	..	17	0
Nux Vomica.... ,,	10	0	..	14	0	11	0	..	15	0
Tamarinds, East India ,,	9	0	..	14	0	24	0	..	30	0
West India, new ,,	12	0	..	22	0	16	0	..	80	0
Vanilla, large .... per lb.	24	0	..	32	0	10	0	..	16	0
inferior ,,	12	0	..	22	0	5	6	..	9	6
Wormseed per cwt.	35	0	..	0	0	25	0	..	30	0
GINGER, Preserved, in bond (duty 1d. per lb.) per lb.	0	6	..	0	8	0	6	..	0	10
GUMS (*see separate list*)										
HONEY, Narbonne ,,	30	0	..	47	0	80	0	..	35	0
Cuba .... ,,	22	0	..	80	0	21	0	..	36	0
Jamaica.. ,,	31	0	..	55	0	25	0	..	45	0
IPECACUANHA .... ,,	5	0	..	6	0	6	0	..	6	3
ISINGLASS, Brazil.. ,,	2	7	..	4	5	3	1	..	3	4
Tongue sort ,,	3	0	..	4	9	3	6	..	5	2
East India ,,	2	0	..	3	11	2	3	..	4	3
West India ,,	8	9	..	4	3	8	8	..	4	0
Russ. long staple	5	0	..	8	0	5	0	..	7	6
,, leaf ,,	3	0	..	5	9	0	0	..	0	0
,, Simovia	1	6	..	2	6	1	6	..	2	6
JALAP, good ...... ,,	3	0	..	3	10	3	9	..	4	3
infer. & stems ,,	0	6	..	2	10	0	6	..	3	6
LEMON JUICE ... per degree	0	1	..	0	1⅛	0	1	..	0	1⅛
LIQUORICE, Spanish per cwt.	60	0	..	65	0	63	0	..	68	0
Italian ,,	48	0	..	63	0	48	0	..	67	0
MANNA, flaky .... per lb.	3	6	..	4	6	3	0	..	3	6
small...... ,,	2	0	..	2	6	1	3	..	1	9
MUSK.............. per oz.	18	0	..	34	0	24	0	..	36	0
OILS (*see also separate List*)										
Almond, expressed per lb.	1	0	..	0	0	1	3	..	0	0
Castor, 1st pale .... ,,	0	4¾	..	0	0	0	5¾	..	0	6
second .... ,,	0	4½	..	0	0	0	5½	..	0	
infer. & dark ,,	0	4½	..	0	0	0	4¾	..	0	5
Bombay (in casks)	0	4	..	0	4½	0	4½	..	0	0
Cod Liver ......per gall.	5	0	..	6	3	4	0	..	6	3
Croton............per oz.	0	8	..	0	4	0	3	..	0	4
Essential Oils:										
Almond ....per lb.	42	0	..	0	0	40	0	..	0	0
Anise-seed ...... per lb.	8	8	..	8	9	9	6	..	9	9
Bay ....per cwt.	05	0	..	70	0	70	0	..	80	0
Bergamot ......per lb.	8	0	..	14	0	12	0	..	20	0
Cajeput, (in bond) per oz.	0	1¾	..	0	2	0	1¾	..	0	2
Caraway ....per lb.	5	6	..	6	3	5	4	..	5	6
Cassia .... ,,	5	0	..	0	0	5	6	..	0	0
Cinnamon ......per oz.	1	0	..	4	6	1	0	..	4	0

	1870.		1869.	
Essential Oils, *continued*:—	s. d.	s. d.	s. d.	s. d.
Cinnamon-leaf ..per oz.	0 4	0 0	0 6	0 0
Citronelle ...... ,,	0 2¼	0 2¼	0 2⅝	0 3½
fine.... ,,	0 3	0 0	0 4	2 0
Clove..........per lb.	2 7	0 0	2 9	0 0
Juniper .... ,,	1 9	2 0	1 9	2 0
Lavender........ ,,	3 0	4 3	2 9	3 9
Lemon.......... ,,	5 0	7 0	4 6	8 0
Lemongrass ....per oz.	0 3½	0 4	0 4½	0 5
Neroli .... ,,	0 5	0 6	0 0	0 0
Nutmeg .... ,,	0 5	0 10	0 4	0 0
Orange..........per lb.	5 0	7 0	5 0	8 0
Otto of Roses....per oz.	13 0	20 0	15 0	20 10
Peppermint:				
American ....per lb.	14 0	15 6	19 0	20 0
English ...... ,,	32 0	42 0	38 0	43 0
Rosemary ...... ,,	1 9	2 0	1 9	2 0
Sassafras........ ,,	4 0	4 6	3 6	4 0
Spearmint ...... ,,	4 0	16 0	14 0	18 0
Thyme.......... ,,	1 10	2 0	1 10	4 0
Mace, expressed .. per oz.	0 1	0 2½	0 0¾	0 2½
OPIUM, Turkey ...... per lb.	35 0	36 0	42 0	46 0
inferior ...... ,,	25 0	33 0	30 0	40 0
QUASSIA (bitter wood) per ton	140 0	150 0	120 0	130 0
RHUBARB, China, good and fine ....per lb.	4 6	8 0	4 6	7 6
Good, mid. to ord. ,,	0 8	4 3	1 0	4 0
Dutch trimmed ,,	9 6	10 0	0 0	0 0
Russian .... ,,	0 0	0 0	0 0	0 0
ROOTS—Calumba..per cwt.	30 0	40 0	35 0	50 0
China .... ,,	35 0	45 0	27 0	43 0
Galangal .... ,,	17 0	22 0	13 0	18 0
Gentian .... ,,	19 0	0 0	16 0	0 0
Hellebore ...... ,,	22 0	30 0	22 0	30 0
Orris............ ,,	38 0	44 0	38 0	42 0
Pellitory .... ,,	58 0	60 0	58 0	60 0
Pink..............per lb.	0 7	0 10	0 6	0 9
Rhatany .... ,,	0 5	0 10	0 6	0 10
Seneka............ ,,	1 9	0 0	1 11	0 0
Snake .... ,,	1 2	0 0	1 3	0 0
SAFFRON, Spanish .. ,,	44 0	0 0	28 0	35 0
SALEP ....per cwt.	110 0	0 0	120 0	130 0
SARSAPARILLA, Lima per lb.	0 6	0 7	0 7	0 8
Para.............. ,,	1 0	1 3	1 0	1 3
Honduras .... ,,	1 2	1 6	1 0	1 3
Jamaica .... ,,	1 11	2 6	1 4	2 1
SASSAFRAS ....per cwt.	0 0	0 0	15 0	0 0
SCAMMONY, Virgin ..per lb.	28 0	32 0	28 0	35 0
second & ordinary ,,	10 0	23 0	10 0	23 0
SENNA, Bombay .... ,,	0 3½	0 6	0 3	0 5½
Tinnivelly .... ,,	0 2	1 0	0 1½	1 0
Alexandria........ ,,	0 4	1 6	0 7	1 0
SPERMACETI, refined.. ,,	1 6	1 7	1 5	1 6
American .... ,,	1 6	0 0	1 4	1 5
SQUILL.............. ,,	0 1¼	0 2¼	0 1	0 2¼

GUMS.

	1870.		1869.	
	s. d.	s. d.	s. d.	s. d.
AMMONIAC drop ..per cwt.	200 0	250 0	220 0	260 0
lump .. ,,	120 0	200 0	140 0	240 0
ANIMI, fine washed ,,	300 0	340 0	260 0	320 0
bold scraped ,,	220 0	290 0	190 0	260 0
sorts ...... ,,	160 0	200 0	110 0	185 0
dark ...... ,,	75 0	100 0	80 0	110 0
ARABIC, E. I., fine pale picked .. ,,	76 0	82 0	77 0	84 0
srts, gd. to fin ,,	65 0	74 0	62 0	75 0
garblings.. ,,	40 0	60 0	40 0	60 0
TURKEY, pick. gd to fin. ,,	170 0	210 0	180 0	220 0
second & inf. ,,	90 0	160 0	90 0	170 0
in sorts .. ,,	75 0	100 0	75 0	110 0
Gedda.... ,,	33 0	44 0	42 0	54 0
BARBARY, white .. ,,	75 0	80 0	80 0	100 0
brown .. ,,	70 0	75 0	72 0	78 0
AUSTRALIAN ...... ,,	24 0	45 0	34 0	46 0
ASSAFŒTIDA, com. to gd ,,	40 0	100 0	85 0	110 0
BENJAMIN, 1st qual. ,,	280 0	460 0	360 0	600 0
2nd ,, ,,	140 0	220 0	140 0	220 0
3rd ,, ,,	60 0	120 0	60 0	130 0
COPAL, Angola red ,,	95 0	107 6	95 0	102 0
Benguela .. ,,	90 0	105 0	95 0	103 0
Sierra Leone..per lb.	0 4	1 3	0 5	1 2
Manilla ....per cwt.	32 0	55 0	30 0	45 0
DAMMAR, pale .... ,,	77 6	85 0	90 6	97 0
EUPHORBIUM ...... ,,	13 0	14 0	18 0	20 0
GALBANUM .... ,,	160 0	260 0	180 0	220 0
GAMBOGE, pckd. pipe ,,	280 0	320 0	320 0	330 0
GUAIACUM ....per lb.	0 9	1 6	0 8	1 4
KINO..............per cwt.	60 0	140 0	60 0	120 0
KOWRIE, rough.... ,,	47 6	55 0	42 6	50 0
scraped .. ,,	56 0	105 0	52 6	105 0
MASTIC, picked......per lb.	5 6	6 0	5 0	6 0
MYRRH, gd. & fine per cwt.	190 0	230 0	190 0	250 0
sorts......	95 0	185 0	90 0	170 0
OLIBANUM, p. sorts	80 0	85 0	70 0	76 0
amber & ylw.	71 0	73 0	62 0	68 0
garblings.... ,,	25 0	50 0	25 0	45 0
SENEGAL ....per cwt.	80 0	95 0	73 0	84 0
SANDARAC .... ,,	65 0	100 0	80 0	100 0
THUS.............. ,,	13 0	14 0	13 0	14 0
TRAGACANTH, leaf.. ,,	220 0	330 0	230 0	360 0
in sorts ,,	115 0	210 0	120 0	230 0

OILS.

	1870.		1869.	
SEAL, pale..........per tun	£43 0	0 0	£36 0	0 0
yellow to tinged ,,	36 0	41 0	33 0	34 0
brown........ ,,	84 0	35 0	31 0	32 0
SPERM, body ...... ,,	91 0	0 0	100 0	0 0
headmatter ,,	90 0	0 0	0 0	0 0

	1870.		1869.	
Oils, *continued*:—	£ s.	£ s.	£ s.	£ s.
COD................ ,,	38 10	0 0	40 10	41 0
WHALE, South Sea, pale ,,	39 0	0 0	38 0	0 0
yellow ,,	37 0	33 0	37 0	0 0
brown ,,	36 0	0 0	33 6	0 0
East India, Fish ,,	32 0	33 0	31 0	32 0
OLIVE, Galipoli ...... ,,	58 0	59 0	54 0	0 0
Trieste ...... ,,	57 0	58 0	52 0	0 0
Levant ...... ,,	54 0	55 0	48 0	0 0
Mogador...... ,,	53 0	0 0	47 10	0 0
Spanish ...... ,,	58 0	0 0	50 0	0 0
Sicily .... ,,	57 0	0 0	51 0	0 0
COCOANUT, Cochin.. per ton	46 0	0 0	50 0	0 0
Ceylon .. ,,	42 0	0 0	47 10	46 10
Sydney ,,	35 0	41 0	40 0	45 0
GROUND NUT AND GINGELLY:				
Bombay	0 0	0 0	0 0	0 0
Madras................	42 10	0 0	37 0	0 0
PALM, fine	40 10	0 0	41 0	41 10
LINSEED	32 5	0 0	0 0	0 0
RAPESEED, English, pale ..	44 0	0 0	31 0	0 0
brown........	42 0	0 0	36 10	0 0
Foreign pale....	45 10	0 0	34 10	34 0
brown........	42 0	46 0	37 0	0 0
COTTONSEED	31 0	0 0	27 10	32 10
LARD..................	76 0	0 0	78 0	80 0
TALLOW	35 0	0 0	37 0	38 0
TURPENTINE, American, cks.	19 0	0 0	25 6	26 0
PETROLEUM, Crude	14 0	0 0	14 0	15 0
	s. d.	s. d.	s. d.	s. d.
refined, per gall.	0 10	1 0	1 8½	1 10
Spirit ,,	1 6	1 7	0 8½	0 9

SEEDS.

	1870.		1869.	
	s. d.	s. d	s. d.	s. d.
CANARY ....per qr.	50 0	60 0	60 0	65 0
CARAWAY, English per cwt.	48 0	52 0	0 0	0 0
German, &c.....	28 0	46 0	32 0	44 0
CORIANDER	20 0	22 0	19 0	19 0
HEMP ....per qr.	40 0	44 0	42 0	44 0
LINSEED, English per qr ..	0 0	0 0	65 0	72 0
Black Sea & Azof	57 0	0 0	59 0	0 0
Calcutta ,,	59 0	0 0	58 0	0 0
Bombay ,,	66 6	0 0	59 0	0 0
St. Petrsbrg. ,,	54 0	55 0	55 0	56 0
Mustard, brown..per bshl.	8 0	14 0	13 0	16 0
white.. ,,	7 0	13 0	12 0	14 0
POPPY, East India per qr.	57 0	0 0	61 6	0 0

SPICES.

	1870.		1869.	
CASSIA LIGNEA ....per cwt.	120 0	130 0	130 0	140 0
Vera .... ,,	47 0	83 0	50 0	90 0
Buds .... ,,	160 0	175 0	140 0	162 6
CINNAMON, Ceylon,				
1st quality ....per lb.	1 10	3 7	2 0	3 10
2nd do. ...... ,,	1 6	3 4	1 9	3 6
3rd do. ...... ,,	1 3	3 1	1 6	3 1
Tellicherry ...... ,,	0 0	2 7	0 0	0 0
CLOVES, Penang.... ,,	0 10¾	1 0	0 10	1 0
Amboyna........ ,,	0 4½	0 5¾	0 5	0 6
Zanzibar .... ,,	0 3⅜	0 3½	0 3½	0 4½
GINGER, Jam., fine per cwt.	110 0	200 0	90 0	195 0
Ord. to good .. ,,	36 0	100 0	35 0	80 0
African.......... ,,	26 0	0 0	27 6	0 0
Bengal .... ,,	26 0	0 0	30 0	31 0
Malabar .... ,,	26 0	0 0	0 0	0 0
Cochin .... ,,	35 0	110 0	34 0	120 0
PEPPER, Blk, Malabar, per lb.	0 5½	0 6	0 5	0 6
White, Tellicherry ,,	0 9	1 5	0 10	1 6
Cayenne .... ,,	0 9	1 2½	0 4	0 8½
MACE, 1st quality ..per lb.	3 0	3 9	2 9	3 2
2nd and inferior.. ,,	2 4	2 11	1 6	2 7
NUTMEGS, 78 to 60 to lb.	2 8	4 0	2 5	4 2
90 to 80 ,,	2 2	2 7	1 10	2 4
132 to 95 ,,	1 6	2 1	1 5	1 9

VARIOUS PRODUCTS.

	1870.		1869.	
COCHINEAL—				
Honduras, black ..per lb.	2 8	3 10	3 2	4 5
,, silver .. ,,	2 7	2 11	2 9	3 7
,, pasty .. ,,	2 0	2 6	1 4	2 7
Mexican, black .... ,,	2 8	3 0	3 1	3 3
,, silver .... ,,	2 7	2 8	2 10	0 0
Teneriffe, black....	2 9	4 0	3 0	5 0
,, silver.... ,,	2 7	2 9	2 11	3 4
PUMICE STONE ..per ton	120 0	160 0	120 0	160 0
SOAP, Castile ....per cwt.	35 0	0 0	38 0	59 0
SPONGE, Turk. fin pkd pr lb.	12 0	16 0	12 0	14 0
Fair to good .. ,,	4 0	11 0	5 0	11 0
Ordinary...... ,,	1 0	3 6	2 0	4 0
Bahama............ ,,	0 6	2 6	0 9	2 6
TERRA JAPONICA—				
Gambier .. per cwt.	17 3	17 6	17 6	17 9
Free cubes ,,	19 0	21 0	21 0	24 0
Cutch ..... ,,	24 0	25 6	30 0	32 0
WOOD, DYE, Bar ..per ton	£4 0	£4 10	£5 0	£5 10
Brazil .... ,,	30 0	45 0	0 0	0 0
Braziletto .... ,,	0 0	0 0	0 0	0 0
Cam .... ,,	17 0	24 0	23 0	26 0
Fustic, Cuba...... ,,	7 15	8 10	7 15	8 15
Jamaica .... ,,	4 10	5 10	5 15	7 6
Savanilla........ ,,	0 0	0 0	6 0	6 5
LOGWOOD, Campeachy ,,	9 10	10 10	9 0	10 0
Honduras ...... ,,	5 10	5 15	0 0	0 0
St. Domingo .... ,,	5 0	5 10	5 15	6 0
Jamaica .... ,,	4 12	0 0	5 15	6 0
LIMA, first pile.... ,,	11 15	0 0	14 0	14 10
RED SANDERS...... ,,	7 6	9 0	7 0	7 10
SAPAN, BIMAS, &c. ,,	7 0	9 10	10 0	13 0